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THE APPLE

IN

ORCHARD AND GARDEN

Ballantyne Press
BALLANTYNE, HANSON AND CO., EDINBURGH
CHANDOS STREET, LONDON

THE APPLE

IN

ORCHARD AND GARDEN

AN ACCOUNT OF ITS IMPROVED CULTURE

BROUGHT DOWN TO OUR OWN DAY

BY

JAMES GROOM

LATE OF LINTON

REPRINTED FROM "THE GARDEN"

WITH A CHAPTER ON APPLE COOKERY

LONDON

GEORGE ROUTLEDGE AND SONS

BROADWAY, LUDGATE HILL

NEW YORK: 9 LAFAYETTE PLACE

1883

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THE APPLE.

THIS king of hardy fruits has of late years been brought prominently before the public, owing to the accounts given of the immense shipments of apple barrels from America, and the ready sale with which they meet in this country, a circumstance which shows that there is a demand for good fruit, if it can be sold at a price within the reach of the many. These American importations have wonderfully influenced our home growers, and, therefore, in Kent at least, fruit culture has made rapid progress within these last few years, and, above all, the apple. As an example of what may be done with it in the form of cordons, espaliers, pyramids, or pot trees, I may mention Barham Court, Maidstone, where there is the most complete fruit garden I have ever seen. Here it is well shown that English grown fruit could compete successfully with the best examples of France, or even the Channel Islands. But it is to the orchard system that supplies our markets I shall more fully allude, that being the one most likely to

meet the wants of the majority of cultivators, and the only one likely to stand against any amount of competition from abroad. This mode of culture is well carried out by Messrs. Skinner and Son, who count their produce from apple trees alone by thousands of bushels. I may also refer to Mr. L. Killick, of Langley, who is making dwarf, bush, and pyramid trees a speciality, and who grows only the very best of sorts, both culinary and dessert. English grown apples of good sorts can hold their own as regards quality with the produce of the most favoured climes. And it is only in disastrous seasons like those of 1879 and 1880 when the summer temperature falls below the average that they fail. Our largest tree-producing nurseries are taxed to their utmost to supply trees. The dark days of neglect and mismanagement of our orchards are nearly over, and people are beginning to be awakened to the fact that in the apple we have a fruit capable of meeting our highest expectations, and one infinitely varied. Look at the beautiful varieties of Crab; how glorious they are in spring in all shades of blushing pink and white, and see them now bending under glowing wreaths of crimson fruit. Look, too, at a really good orchard on grass, the best of all ways for growing apples in quantity, and say if you can find a fairer sight, either in flower or fruit. The culture, therefore, of so useful a fruit opens a wide field for improvement. Until recently orchards were starved at the root, and pruning was barbarous mutilation; yet, in spite of mismanagement, the trees

continued to produce fruit. Now we begin to see that a tree which produces an annual crop in weight almost equal to that of the tree itself—trunk and branches—must needs require food, or exhaustion and its attendant evils will be the result; therefore, we now find the manure cart busy in old orchards said to be worn out, and the result is that they quickly resume their wonted vigour, for an apple tree on good soil, and carefully attended to at top and root, cannot be said to be worn out as long as branches enough are left to carry a crop. I may mention that some kinds of apples grown about here specially for the jam manufactories, such as the many varieties of Goffs, although as sour and hard as Crabs, are yet preferred for boiling down to a pulp or jelly, and the trees are so extraordinarily prolific, that a moderate sized tree will produce from fifteen to twenty bushels, the average price for which is 2*s.* per bushel, carried from the tree by the buyers, and they pay well at that price. In fact, in many orchards where Goffs have been planted for grafting purposes, they are being left and carefully tended, solely for supplying the demand that is yearly increasing for them. And I may mention that, when grown on the turf, they are generally shaken down, thereby reducing the cost of gathering.

Selection.—But for supplying the market, growers are selecting the very best of sorts proved to succeed in their soil, and elevation, and that will follow each other in succession, from the earliest Keswick and Juneatings, to the latest varieties that

are stored for winter and spring use. As regards selection, I should like to point out an error into which those who contemplate planting too frequently fall—viz., that of going to some noted autumn show of hardy fruit, and then carefully taking down the names of the prize winners, or such as figure most prominently, naturally thinking that they must have been grown out-of-doors, whereas most exhibitors have some of their choicest sorts in pots under glass, or on walls to get them up to the highest perfection of colour. The owners of such fruit would no more think of planting such varieties for producing a daily supply than they would think of planting Muscat grapes on open walls. I would also warn intending planters against purchasing trees stated to be adapted for all soils and situations. No, they should look about and see what succeeds in their own neighbourhood, and should go to the market and see which sorts command the best prices; the public will bid high for Ribston Pippins, Golden Pippins, or Margils, but will not go beyond the proper value for showy sorts that, owing to their looks, get to the front on the exhibition table; moreover, at any good fruit tree nursery we can find what sorts are being most extensively propagated, and in selecting these it is evident we cannot well go far wrong. The old prejudice against varieties that have never been recognized by our fruit committees, is being dissipated by hard facts; and the best qualification of any sort now to assure its being extensively planted, *is its ability* to produce crops when what are called

better sorts fail; for the variety is not yet raised that combines every good quality, and although the Ribston Pippin still commands a high price in market, as well as the first place in private gardens for quality, it must be superseded by sorts that are not only of good quality but that in all sorts of seasons produce better results, for fruit is not now a luxury but a necessary of our existence, and only sorts that are free bearers can be recommended for the general cultivator. But those who go in for collections of apples will, of course, continue to take pride in the number of sorts that can be got together; and the very best selection for one locality will not prove equally successful in another, so that there is need for retaining a large number of sorts in cultivation.

Apple Farming, as it may be called, on a large scale requires that the relations of landlord and tenant should be upon a firmer basis than they have been of late. Tenants will not incur the necessary outlay to establish orchards for their successors to reap the harvest. There must be either a system by which the ownership of land can be acquired, or full compensation for improvements granted, not as a privilege, but as a right, before the land is turned to its proper account. We hear of land wanting tenants. Why, to grow apples alone, sufficient to supply the country's wants, would profitably occupy a good deal of it and of unemployed labourers as well. While we are waiting for statesmen bold enough to take the shackles off our home industries,

both the owner, occupier, and labourer are suffering, and countries with free trade in land as well as in produce are reaping the benefit.

Training.—I will only briefly refer to this now. How many books have been written and hundreds of illustrations drawn to show the correct mode of training. Yet people tire of these and go back to the old-fashioned tree that spreads its head broad or high according to its habits, and having become satiated with pruning and training they go to the opposite extreme, and adopt the extension system, and, as a rule, not only adopt it with all its advantages, but all its faults, for like all other things it may be overdone; a tree grown in a natural style does not, in my opinion, mean a tree left to Nature. No, we have grafted a good apple upon a wilding, and must carefully tend it to keep it in good form. In succeeding chapters on how to best achieve that desirable end, I shall detail the practice that is found to answer best under various circumstances, for no one system will suit all soils and situations.

Propagation.—The apple is readily propagated by means of seeds, but the produce of seedlings is generally inferior to that of the parent plant, and as it is rather a tedious affair waiting for seedlings to fruit, few attempt to raise them; indeed, many of our best varieties of apples certainly owe their origin more to chance than to skilful cross-breeding, There is, however, a wide field of usefulness open to hybridists, who will strive to get either very early or very late sorts, for our main force lies in varieties fit for

use during the three last months of the year, while of really good kinds ripe in July and August, the stock is even more limited, as is also that of sorts that keep well far into the spring months. As it is during the months of November and December that we are most likely to have our markets glutted with foreign produce, hybridists should aim at getting a race of apples either very early like the Kerry Pippin, Juneating, or Red Quarrenden, or of the very late flowering and keeping race, such as Court Pendu Plat, with the quality of a Ribston Pippin or Cox's Orange Pippin in the class for dessert apples, or in culinary sorts some that would equal Norfolk Beefing as a keeper with the quality of a Wellington. Such fruits would realize a fortune in the case of any raiser, and those not fortunate enough to get kinds of sufficient merit to retain could easily convert their seedlings into useful trees by grafting good old kinds on them. It is singular that while hundreds of hybridists are trying to improve such plants as the Coleus, that are as transitory as the rainbow, comparatively few devote any attention to improving fruits, more especially those belonging to the hardy section. As a proof of how vigorous seedling apple trees are compared with grafted ones, I may mention that in many localities in which I have resided where apples grafted on various kinds of stocks have made but very moderate progress, seedlings of possibly no great merit that had been planted in any hedgerow or out-of-the-way corner have grown vigorously and borne abundant crops, which proved

most acceptable when those of better sorts failed. It would, therefore, be a good thing if raising seedlings were more the rule than the exception; even those who have no knowledge of hybridising with a view to raising new sorts might save the pips of any particularly good apple, and bury them in a pot of mould or sand until the soil was in good condition for sowing in spring; then they could draw drills about 1 ft. apart and sow the seed thinly and evenly, covering it with about 1 in. of fine soil; the soil should be kept moist until the seed has germinated, and for the rest of the season the surface must be kept clean. If the seedlings have done well they will require transplanting in the autumn, selecting all the best and most promising plants, and after cutting back the tap-roots, replanting them in some open sunny position in lines 3 ft. apart and 1 ft plant from plant. By allowing plenty of room between the rows, an intermediate crop might be grown the first year or two. Perhaps the best as well as the most rapid way, however, of testing seedlings is to graft or bud them on Paradise stocks, or even on old bearing trees when any that are worthy of culture may be increased, and the rest cut away or re-grafted. We have some trees that have twenty sorts of seedling apples on them, all fruitful and healthy, but not distinct enough to add to the general stock. It takes a really good fruit to supersede many of our old sorts when well grown. Seedling varieties may, however, be more vigorous and fruitful in adverse seasons when our tender sorts fail.

Raising Stocks.—The raising of apple stocks on a large scale is a branch of the trade confined to certain nurserymen, who carry on that business in such a large way that they are able to supply other nurserymen at wholesale rates cheaper than they could raise them themselves, when soil, seed, labour, and other incidental expenses are considered. The free or natural stock is the only one adapted for large orchard standards, and seedlings of the Crab or wild apple are far more vigorous than seedlings of cultivated sorts; therefore when seed can be obtained it is undoubtedly the best, but failing this seed of hardy vigorous cider apples make good substitutes. Seedlings raised from choice garden kinds act as dwarfing stocks, and are therefore useful where restricted vigour is the object sought. The various sorts of Paradise now so successfully employed for dwarf or trained trees are raised by means of layers or cuttings, the stools being earthed up annually to get a supply of rooted shoots that are detached in November, and treated in the same way as seedlings or free stocks. The tendency now, however, is all in favour of full-sized standards and isolating them —*i.e.*, not mixing them with ordinary garden crops, both for market and private use. The best time to sow the seed is probably the autumn, and if not sown then, it should be preserved from drying, by covering it with sand or moist soil until the ground is fit for its reception. Early in spring sow moderately thick in drills 1 in. deep and cover with fine soil; keep the ground moist in dry weather and free from

weeds, and the seedlings will be fit for transplanting into nursery lines the following autumn. The usual routine in nurseries is to plant the young seedling stocks in lines 1½ ft. apart, and the plants 3 in. asunder; there they remain one or two years according to the growth they make, some seasons being much more favourable for developing rapid growth than others. The only attention necessary during this period is to keep down weeds and maintain a loose friable surface by means of hoeing or scarifying. At the end of the second year, or when three years old from seed, they are finally planted out where they are to remain for budding or grafting, and to form trees fit for permanent planting in orchards.

Preparing the Soil for Stocks.—This is an important item in the cultivation of young apple trees, for a vigorous healthy development is more likely to produce trees free from disease than a starved or stunted growth. I was, therefore, not surprised when lately visiting Messrs. Bunyard's nursery at Allington, near Maidstone, where apples, both on the free stock for large orchard trees, and on the most popular dwarfing stocks for bushes, cordons, &c., are made a speciality of, to find large heaps of short rotten stable manure lying ready for being trenched into the quarters now in course of preparation for the forthcoming planting season. For this purpose only the very best stable manure from London is used, and I was assured that no *artificial* manure yet tried had produced equal results

in the way of promoting clean, healthy growth free from disease. Out of some hundreds of thousands of trees one could not find a stunted specimen; all were young, healthy, and vigorous, the bark having that shining look which denotes health in the best sense of the word. The staple of the soil hereabouts is a moderately stiff loam, not particularly rich naturally, but of good depth, and under good cultivation capable of making a most fertile soil, and, what is of even more importance than the upper stratum, the subsoil suits fruit trees admirably, being mostly a soft, porous stone, locally called hassock or Kentish ragstone, or the same kind of material very much broken up and mixed with the soil, and locally known as stone shatter. In some places this is abundant even on the surface, and it is surprising how well it suits fruit trees; the roots cling to the stones, which provide efficient drainage, and also retain moisture during periods of drought; to this is mainly attributed the health and fruitfulness of the trees on this formation. In many places in this locality the subsoil is composed of a reddish clay called red-pin, a poor hard soil that bakes as hard as a brick when dried, and when mixed with the soil requires very careful management to get it into a friable state; if worked when wet it becomes a hopelessly sodden mass, but if exposed to frost or drought it mixes with the other soil like lime just slaked. Where this abounds young trees make extremely strong growths, but not very fibry roots. It is therefore to be avoided for nursery work, as the

strength of the tree must not be expended in coarse, watery shoots, but such as will ripen up hard and brown to the very tips.

Elevation and Aspect.—The best aspect and elevation for young trees during their early stages is not necessarily the best for them when approaching the mature or fruitful stage, as the object in the first place is to get the young trees as quickly as possible up to the stage most suitable for transplanting to permanent quarters. If they set a crop of fruit while very young, it is severely thinned so as not to materially reduce the growth of the tree; merely a few fruits are left to prove that the trees are true to name, and in the case of those on dwarfing stocks a few trees are allowed to bear a full crop in order to let visitors unacquainted with that mode of culture see what kind of crops can be grown on miniature trees, specially prepared for fancy modes of training, such as cordons, bushes, &c. An open sunny position tolerably well elevated is the best that can be selected for young stock, for in addition to perfect drainage, and consequently higher temperature of the soil, the trees get a maximum of light and air, a condition on which thoroughly ripened wood depends, thereby avoiding canker and other ailments that follow severe winters acting on half-ripened wood.

Planting the Stocks.—Having a suitable position well prepared by trenching, and that has previously been cropped with some kind of nursery stock different from the apple, two- or three-year-old

Crab or free apple stocks that have been bedded in thickly are then taken up carefully, and after the coarse roots have been shortened, replanted in rows 3 ft. apart and 1 ft. asunder in the row. This work is pushed on as speedily as possible after the leaf begins to fade or fall, for if got in early they get partially established before winter sets in, and where many thousands have to be replanted, every favourable opportunity when the soil is workable has to be embraced. In the case of adhesive soils much treading when saturated with rain is absolute ruin to them, and when that is the case the men are employed in preparing the plants, cutting sets, or making cuttings. I may mention that although 3 ft. apart may appear a wide interval for small plants, yet it is really the best in the end, as the plants get a free circulation of air, and above all it permits a set of hoes or a shallow cultivator to be kept at work during the growing season, thus keeping down weeds and providing a mellow surface of finely pulverized soil that greatly assists growth, and in periods of drought prevents cracking, Under favourable conditions these young stocks will be strong enough for grafting or budding after one season's growth in the quarters just alluded to, but if not, or from any cause they may not be required, they are left for another season.

Heading down the Stock.—Presuming that the stocks have made satisfactory progress since being transplanted to their grafting quarters, and that they are four or five years old from seed or

layers, they will have stems about as thick as a man's finger, and, being well established at the root, will be in the best possible condition for grafting. The first operation will be to cut them down near to where they are to be grafted, or about 1 ft. from the ground, grafting being usually done at 9 in. from the ground. The date of cutting down stocks cannot be fixed with certainty, but it should be done before the sap is in motion, and after the severest frosts are past; about the end of January is the ordinary period at which it is done about here, but should frosts set in it is deferred until February, for in the case of freshly cut wood, the frost may cause splitting, thereby damaging the stocks.

Procuring the Scions may be advantageously pushed forward at any time most convenient during winter; they may be preserved for a long period by burying them almost to the tips in moist soil, where they are safer than on the tree; in fact, in localities where very severe frosts prevail it might be advisable to take off the grafts of rare or tender sorts before the advent of our maximum of cold and bury them safely out of its reach, for as young wood only is admissible for scions, it follows that unless thoroughly ripened they might get injured, and thereby lay the foundation of disease or decay in the future tree. Great care should be taken to collect the grafts only from healthy trees, for although the young shoots of diseased trees may appear healthy, yet it is not advisable to use them for purposes of propagation. Shoots of medium strength should be

selected, as they are generally better ripened than large ones, and have more substance than small ones. They should not be tied in bundles, but laid in so that each scion is in contact with the soil, for in bundles the centre ones are liable to wither, and therefore useless for the purpose required, while the outer ones keep fresh and plump. The best way is to cut trenches and lay in each variety separately with a large label attached to it showing name and source whence procured. In nurseries most varieties are numbered, the names being registered in a book, and a most important thing it is to have every kind true to name; nothing is more vexatious after getting any special sort than to find when it fruits that it is not the sort that it was represented to be. Most nurserymen, however, prove their stock plants from which they procure scions before sending any out. It is always advisable to lay in more grafts than are likely to be required, for of late years re-grafting of bearing trees with sorts more in demand in market has been very largely adopted, and when a tree misses a crop, which has been unfortunately too common of late, it may be re-grafted quite late in the year, provided one has the scions laid in reserve. I have on several occasions grafted large trees that had failed to crop at quite the end of May, and by the end of season have had a good head of branches that fruited well the third season, thus saving a year.

GRAFTING.

Whip or **Splice Grafting** is the mode most generally adopted in the case of young trees, such as those in nurseries, and to any one wishing to try this kind of grafting I would say, cut off the stock at the desired height in a slanting direction, so that a bud is left at the back of the topmost portion to keep the stock in active growth until a union is effected; then take a small slice of wood off the stock, deep enough to penetrate the inner bark, remove a little of the wood, and make a slit in the stock, into which the tongue of the graft must be inserted. The graft should be from 4 in. to 6 in. long, cut in a sloping direction from the middle downwards to the outer edge; then cut up the centre of the cut portion, so as to form a tongue to fit into the cleft made in the stock, carefully fitting the scion to the stock, so that one of the outer edges at least lies even with the bark of the stock; then bind the two firmly together with bast or soft woollen string, especially prepared for the purpose. As to the best time for grafting, as soon as the sap is fully in motion, denoted by the buds swelling up nigh to bursting, the operation may be commenced. From the middle to the end of March is generally as early as is advisable to graft, provided the atmospheric conditions are favourable—viz., moist and showery, for a withering east wind that retards vegetation and checks the flow of sap is the very worst condition to start under; therefore, except much grafting has to be done, it is safer

to wait till April has set in. Much of the success attending grafting depends on the stock being in advance of the scion, for then the latter finds sap enough for its wants; therefore, I have generally had better success in grafting after the middle of April than at any time in March, but as a rule the operation should take place in the first or second week in April.

Crown or **Rind Grafting** is undoubtedly the best for established trees. This mode of grafting is very easily performed, and the same remarks as to season, &c., apply in this case as in whip grafting, except that in old trees vegetation is usually not so early as in young vigorous stocks, and therefore crown grafting may be done after the grafting of young stock is over. The stock having been roughly headed down—viz., all the branches large enough for grafting having been sawn off during the dormant season—each piece should be freshly cut off where it is to be grafted with a small-toothed very sharp saw, and then made quite smooth with the grafting knife; a slit should then be cut through the bark and the scion, prepared as in whip grafting, slipped in, the bark having been carefully lifted for that purpose by a smooth piece of ivory or hard wood, in doing which be careful not to bruise or lacerate the tender inner bark. Two grafts are generally put on shoots the size of a man's wrist, and one on smaller ones. Of late years large branches are seldom or never grafted—only the higher ones which are of a size to heal over quickly. Grafts may grow for a time

when put on large limbs, but they do not heal over like medium-sized ones. When the scions are inserted they are bound up and clayed over as in other modes. The small spray-like shoots not large enough for grafting, that originate below where grafting is performed, are left on for the first season to provide leaf-growth, for if entirely defoliated, both top and roots get severely checked.

Grafting Clay.—The next operation is claying the grafts to exclude air, and although many substitutes for clay have been invented, when carefully put on it still holds its own against all comers, but much of its success depends upon how it is prepared. We select what is called clayey loam, a soft unctuous soil of a greasy character like soft soap, lay it on a smooth surface, such as a stone or slate floor, and beat or knead it until it is worked up into a consistence like that of soft putty; then take horse droppings and rub them through ½-in. mesh sieve and some fresh cow manure, and thoroughly mix all together. When ready for use, form it into an oval mass around the junction between stock and scion, so that only two or three of the top buds are visible. Where the clay is not good a piece of bast of any sort twisted round it will be of great service in keeping it from cracking or washed off by heavy rains. I may add that dry wood ashes, or even sand or gritty soil, materially help to smooth the surface of the clay. All the grafts should be looked over at intervals of ten days or so, and any defect observable in the claying made good.

The Summer Treatment of grafted trees will, as the bark expands, consist in loosening the ligatures, which must be done by degrees, as young vigorous stocks swell up rapidly. When the graft gets into active growth, the ties may be entirely removed, and as soon as the shoots get long enough to blow about with the wind they must be carefully staked, for they are liable to snap off at the union of scion and stock. Single stakes are best for young plants, but for regrafted trees sticks may be tied on each side of the branch, so that they project 2 ft. or 3 ft. beyond the grafts, and some soft matting run round to enclose the growths; the greater liberty, however, compatible with safety, the better, as training is deferred until the following year. Toward the end of the season, if the grafts have made good growths, the stock may be divested of its own lateral shoots, all its vigour being directed to sustaining the grafts.

Budding.—Next to grafting, budding is the most important mode of propagating the Apple, and one now largely employed in nurseries, more especially in the case of new sorts or those for which there is a great demand. It may also be used in the case of stocks on which the grafts have failed. It leaves no unsightly scars that can possibly give rise to future wounds, for in a tree that is budded the union of stock and scion can hardly be detected after the lapse of a year or two. What is called shield budding (from the bud being cut out in the form of a shield) is the most popular mode, and the

end of July or during August is the best time for the performance of the work. The most favourable condition of wood and buds will be found to be when the young growth begins to get firm and the bark strong enough to be removed and reinstated without tearing or injury. Procure shoots of the desired kind that have good plump buds at the base, and keep them quite fresh by putting the cut ends in water, or if for travelling encase them in damp moss, cut off the leaves from the buds selected, but leave the leaf-stalk; it serves for holding the bud by when it is being inserted, and it is doubtless useful to the bud itself. Cut the bud off the shoot with a little slice of bark and wood attached to it, removing the latter carefully, so as to leave the bud entire, for that is injured in removal it will be rendered useless; then taking the stock that has been previously prepared, by being divested of shoots to the desired height, select a smooth clear portion of the stem, free from knots, and make an insertion in the shape of a T with a sharp budding knife; then lift the bark with the ivory handle and insert the bud as quickly as possible; then bind it round moderately tight with soft bast or worsted.

It is not desirable to stimulate growth in the bud during the current year beyond getting it thoroughly united, ready to take the lead the following spring; therefore a good portion of the top growth of the stock is left on until the winter, when it is pruned down and treated in all respects as a graft; being established, it starts early into active growth, and

makes beautiful straight stems; therefore many prefer budding to grafting. I may also state that it is very useful for filling up blank spaces on cordon or espalier trees with fruitful spurs in a very short period. The beauty of these modes of training depends very much on the shoots being perfectly furnished from base to summit with fruiting spurs, so that when in fruit or bloom they may form perfect wreaths, and if from any cause the buds fail to break regularly in spring, it causes unsightly gaps, but by adopting this mode of budding they may be filled at once, of course using the same variety. I would also here remark that, except for some special reason, it is not desirable to grow more than one sort of Apple on a tree. In practice it is not found to answer, and with miniature trees that occupy little space there is really no necessity for putting more than one kind on them.

Standards for orchards with clean stems 6 ft. or 7 ft. high being in greatest demand, form the majority of Apple trees grown in nurseries, and those budded or grafted on Crab or free stocks, and well attended to as regards cultivation, make rapid progress. If kept free from insects and other pests that sometimes are very persistent in their attacks on the young wood, the leading shoots from grafts or buds will reach from 4 ft. to 6 ft. high by the end of the season; but in habit different sorts vary so much, that what would be a good average growth for some of the small wooded table Apples, would be but a poor growth for erect growing kitchen Apples,

and even these vary considerably, for Stone's Apple or Loddington is one of the worst to form a tall standard quickly. It is frequently, therefore, grafted standard high on other sorts. I observe that this variety is invariably staked in the nurseries during its first year's growth, and it should be loosely tied, or cords should be run for its support the entire length of the row. Care should be taken to get as complete a union of scion and stock during the first year's growth as possible; the clay should be removed as soon as the scion is in active leaf growth, and the ties removed as soon as they can be safely dispensed with. Some time in August the heel of the stock that was left opposite the graft should be cut clean off in an upward slanting direction, so that, as the scion swells up, it may completely cover the junction with a layer of young wood before winter sets in.

This can only take place when the scion and stock are in such close relationship that they make about equal rates of growth. If the scion overgrows the stock, it will generally rush into bearing quickly, but its existence will be brief. In order to grow trees large enough for orchards, they must make rapid growth in the earliest stages of their existence; consequently, any over-precocity is detrimental to them. Provided all has gone well with the young trees, they will at the end of the first season's growth be fit to send out as maidens or one-year-olds, and many extensive growers of fruit buy their trees at this stage, and train them according to their wants.

In the second year the same routine of cultivation is followed—viz., keeping the surface soil free from weeds, and frequently stirring it to keep it loose and friable. To facilitate this, the stocks should be planted 3 ft. apart from row to row, a distance which enables a set of hoes to be worked by a pony or donkey, and in this way a large tract of ground can be kept cheaply in thoroughly good condition. In ordinary seasons the leading shoots will generally attain the desired height by midsummer, when their points are pinched down to a few buds above where it is desired the head or main branches should start, and in strong young trees a really good head is formed after midsummer, or a good standard fit for being finally planted in the orchard two years after grafting. Up to this time the leaves and small shoots will have been left on the stem, as they help to thicken it, but they may now, if extending too far, be shortened or pinched to encourage the formation of a head of leading branches; in an ordinary way it takes three seasons to make a first-class orchard tree. The leading shoots should be shortened to where the wood is firm, always cutting to a bud that points in an outward direction, to encourage an open spreading head; only such shoots as have room to develop into main branches should be left, as near equidistant from each other as possible; any that cross or grow inwards should be cut back to form spurs. The same routine of cultivation is followed as in former years, but after midsummer the stem is cleared of its superfluous growths, which are cut

clean off close to the stem. The latter should now be too strong to bend with the weight of the head, and the cuts will get well healed over before the season for lifting has arrived.

Half standards.—These are formed in the same way as standards, but in less time, for the maiden tree is usually tall enough to top down to the height required by the end of the first year, and a good head of shoots is formed by the end of the second from the graft fit for finally planting, the lowest buds and shoots being pruned in closely during the summer. Trees with short, stiff stems about 4 ft. high are in great request for mixed orchards, and, except for the reason of getting the head of branches out of the reach of cattle, nothing is gained by a long stem, which needs staking. Many orchards are under-cropped with bush fruits of various kinds, and for these half standards with good clear 4-ft. stems are preferred. The bushes may be cleared out, as the Apples begin to obstruct the light too much to make them profitable, and the soil may be sown down with Grass seeds for sheep feeding.

Dwarfs or open Bush Trees are very useful either for private establishments or market gardens. They are quite distinct from the miniature dwarfs that are grown on Paradise stocks. Those just named are on the Crab or free stock, and are merely a modification of the preceding form, but with the stem reduced to a minimum. The head of the dwarf bush tree starts directly above the graft, and *generally* consists of three main branches; therefore,

any grafts that have thrown out three shoots of about equal strength may thus be utilized, and if cut back at the winter pruning, will originate from six to nine leading shoots, which will form the groundwork of the future tree. The main object is to keep the centre of the bush open. No more leading shoots must be allowed to grow than can be fully exposed to light and air. They may be planted finally as maidens or as one-year trained trees. The usual distances apart are from 12 ft. to 15 ft. Although in gardens great care is sometimes taken to train these bushes with hoops and stakes, I find quite as good shaped ones, and certainly as fruitful, in market gardens where they are merely pruned into the desired shape, always cutting to a bud that points in the direction required, and pinching or cutting back all the side spray, so as to form a mass of fruitful spurs from base to summit of the main shoots. They generally grow somewhat erect for the first few years, but the heavy crops which they bear soon bring them down until the outer branches assume the desired cup shape, and the quantity of fruit an orchard of this kind will bear is almost incredible to those who may not have seen good examples in favourable situations. Alternate rows of bush trees and standards or half standards is a very good mode of planting where the soil under them is to be kept cultivated, as the trees get a more equable share of light and air than when all the heads are on one level.

Pyramids.—These are useful, as they require

neither stakes nor ties. They are ornamental, too, as well as useful, being especially suited for the sides of walks, and if planted from 12 ft. to 15 ft. apart, their produce forms a valuable addition to the fruit store. If planted as maiden trees, the best plan is to let them grow without cutting them down too hard, merely shortening the leader a little to induce it to throw out stronger shoots from the base. When the leaves have fallen the following autumn prune down to about 1½ ft. high, and shorten the side shoots to where the wood is firm, always cutting to buds that point in the direction the following year's shoot should take. Thus having laid the foundation of the tree, any attention needed in future will be summer pinching, which if carefully done will greatly reduce the need for much winter pruning. Commence by stopping all shoots that appear to be monopolizing more than their share of sap, as very much of the success of trained trees depends on the maintaining an equal balance of growth in all parts. The leading shoot must be kept down till the lower part of the tree gets furnished, but under favourable circumstances the leader may extend from 1 ft. to 1 ft. 3 in. per year until the desired height is attained. As pyramids are supposed to form a perfect cone when fully grown, the height and circumference at the base must be proportional; but nothing is gained by having very tall pyramids, any extra extension of top being at the expense of the lower branches; from 6 ft. to 9 ft. is high enough for any useful purpose. If it be desired to give the young

tree a perfect pyramid form at once, a hoop or strong wire must be run round it for fastening the lower tier of branches to, and the upper tiers must come down in succession; but I find that if allowed to grow more naturally with the points inclining upwards, the balance of growth is much more evenly maintained, and as soon as the trees get heavily cropped the weight of fruit will gradually bring back the shoots to their desired place.

Espaliers.—These form one of the most useful modes of growing dwarf Apple trees, and are well adapted for amateurs with limited space, for if the trees are worked on the Paradise stock they may be kept in very close compass, and many kinds may be grown in a limited area. As a rule they are bought in from the nurseries with three or four tiers of branches already started, but if bought in and planted as maiden trees, the leader is cut down to within about 1 ft. from the ground, and only three shoots are permitted to grow—one to be the leader, and one on each side to form the lower tier of branches. These should not be tied down in a horizontal position at first, but should be brought to it by degrees. The following season the leader must be cut back to three or four buds above where the next tier of branches is to be, for if trained to a wire trellis the horizontal shoots should spring a little below that level. The wires are usually 9 in. or 1 ft. apart; therefore, if the leader is cut down to the next wire each year, the trees will soon cover a trellis, for about five or six tiers in height is ample

for any purpose. After the tree is formed its future management will consist principally of summer pinching, for in this way its strength may be more readily equalized. Commence by pinching the uppermost part of the tree first, so that by leaving a larger amount of foliage on the lowest tiers of branches they will recover the balance of growth, which from being unfavourably placed they may have lost. A decided improvement on the old horizontal espalier is that of planting at closer intervals on dwarfing stocks, and after the third year of training in horizontal form turning the points up at equal distances apart and training erect, leaving five or seven shoots to each tree. The trellis is thus quickly covered. The shoots are more equalized as regards strength, and on the Paradise stock they require very little pruning if carefully pinched in summer.

Cordons.—These have of late years become popular, more especially for the choicest kinds of Apples, such as the White Calville and the Lady Apple, or any that require a little extra warmth to bring them to perfection. I have lately seen very fine examples of this mode of training at Barham Court, where every foot of bare wall is thus utilized, and at the foot of Peach walls a double cordon is planted in front of the Peach trees and trained right and left about 1 ft. from the wall on a strong galvanized wire. They are easily protected in spring, and the heat radiated from the wall greatly helps them. These do well on low terrace walls with a southern aspect, or even upon a boarded fence, but it is as an

edging to the fruit tree quarters that cordons are mostly grown. The single cordon is simply one shoot from the bud or graft. The usual plan is to plant maiden trees and cut them down quite close to or just below the height required for the trellis; during the first season one leading shoot is allowed to grow unchecked, the rest of the shoots being pinched moderately close to form spurs. The leader is cut back to thoroughly ripened wood the following autumn, and tied down to the horizontal wire. The following summer the leader is tied down as it extends, and the shoots that spring erect are pinched to five or six leaves, the spurs being shortened or thinned out at the winter pruning. When the leader meets the stem of the next cordon it is stopped, and a continuous wreath of fruit spurs is thus maintained from end to end of the line simply by pinching the shoots in summer, twice thinning and shortening the spurs, and securely tying in winter. A little fresh mulching put on at midsummer to keep the surface roots supplied with food and from suffering from drought, is all they require to keep them in good condition for many years.

The Double Cordon.—This is treated in every respect like the single cordon; only two shoots are retained, and trained right and left until they meet the points of the next cordon. There can be no question as to the merits of the system, for, looking at the fine wreaths of high-coloured fruit of Emperor Alexander, Cox's Pomona, Cox's Orange Pippin, and similar sorts, or the gigantic specimen of Belle

Dubois or Warner's King and Stone's Apple, the wonder is that cordons are not much more largely used than they are. When it is desirable to have some fine specimens hang as long as possible on the trees, the only precaution necessary is to put a little extra litter under them, on which if they fall they are not injured. Small nets to enclose any choice specimens are very useful, as they keep birds from picking the fruit as well as prevent it from being bruised by falling.

Apples for Walls.—In addition to horizontal cordons that are so useful for covering low walls or bare spaces below Peaches and other choice fruits, walls may be quickly covered with them trained obliquely the same as Pears, and I have no doubt they would be more useful in northern counties than they are in the south, where most kinds of Apples reach perfection on open standards. When, however, one finds the difference in value between good and bad fruit in the market, it is quite worth considering whether or not our choicest Apples should not be afforded in some cases a wall, for as long as we give them secondary positions and treatment we shall only get secondary results. To get walls entirely covered with Apples I should prefer oblique cordons or young maiden trees planted 1½ ft. apart, and trained to wires fastened to the wall in the desired form. It would not take a great extent of wall to furnish a certain supply of the choicest Apples for a private family, and when we consider the length of time they are available for dessert, and

the very meagre results that too frequently attend wall tree culture in the case of other fruit, we are led to wonder why the choice kinds of Apples are not, as has just been hinted, more largely utilized for wall trees, as a really good Apple is worth more on an average than a good Peach or Apricot. Such kinds as Reinette du Canada repay the shelter of a wall, even in the most favoured counties, for wind is more destructive than frost.

Apples as Pot Trees.—It may seem useless to grow Apples as pot trees in a country where they reach a high state of perfection in open air; yet they are so grown in quantity, and repay good culture with a greater certainty than almost any fruit cultivated now-a-days in gardens, for there is always a demand in Covent Garden for the choicest samples procurable, even when indifferent fruits are a drug in the market. For growing in pots nothing beats dwarf pyramids on the Paradise stock; these potted in 12-in. pots, carefully pinched in, and top-dressed annually, will yield enormous crops of the finest fruits, and of sorts that cannot be got to high perfection by any other means. The white Calville and other tender skinned Apples that are nearly transparent when ripe, will pay for the protection of glass in some form or other, and a few well established trees plunged in the orchard house and carefully tended will be found to yield a valuable addition to midwinter desserts. October or November is the time to procure dwarf trees that have been carefully pinched in the nursery; pot

them in good stiff loam, and plunge them in a bed of leaves; they should not be allowed to carry fruit the first season, and all strong shoots should be carefully pinched, but the following spring they may be removed to the orchard house, and take their place with other bearing trees. Top dressing, pinching, and above all a regular supply of liquid, constitute the main elements of success in the cultivation of Apples under glass.

Best Position for an Orchard.—There can be no doubt that the position of an orchard has much to do with its success, and that the more favourable the site the better the results. Any one, therefore, looking for land to convert into an orchard had better pay double for that which is favourably situated than commence in an unsuitable locality. In this part of Kent we have light stony soils on the elevated portions, generally a moderately stiff loam on the slopes, and very stiff retentive soil in the low-lying localities. On all these the Apple is grown in large quantities; but whereas both highlands and lowlands have their years of scarcity quite as frequently as their years of plenty, the orchards on the gentle slopes facing the south or west very seldom fail. For the hill tops only the commonest kinds are available, and in the stiff soil of the low-lying grounds, although most kinds grow luxuriantly, they do not ripen their wood so well as on the hill sides, and they are more liable to suffer from frosts both in winter and spring, the former injuring the immature shoots, and the latter the

blossoms. Stagnant moisture, too, hangs around the trees in the valley, while those on the hill sides escape. It is for this reason that land on the slopes, or hang of the hills, as it is called, is so valuable for orchards. It is naturally well drained, and sheltered by the higher ground behind; and the soil being of good depth, resting on Kentish ragstone or hassock, the trees retain their vigour for many years. Either a full south aspect or south-west is considered the best, for if the slope looks eastward the cold winds are most destructive in spring. In the blossoming season, too, the sun shines fully on the trees directly it is above the horizon, thus injuring the blooms wet with hoar-frost; while on the southern slopes, and more especially if they incline to the west, there is time for the blossoms to get dry before the sun's rays reach them. I find, therefore, that many of the best orchards in this locality that are famed for continuous cropping are on the western slopes of hills. It is in seasons when the crop is partial, that owners of sheltered orchards reap the benefit, for the expenses of carriage and commission are the same when the price ranges from 2*s.* to 3*s.* per sieve as they are when it ranges from 5*s.* to 7*s.* One year's crop in such seasons would pay for the loss of that of several years were such a mishap possible, which is unlikely.

Shelter.—This has a most important effect upon the welfare of orchard trees, more especially when young, for in old orchards the trees shelter one another, only the outer rows showing the ill effects

of exposure. Any one contemplating planting, therefore, should previously supplement whatever shelter exists with some rapidly growing belts on the exposed side, more especially on the north and east. In this locality we are supposed to enjoy a comparatively mild climate, yet shelter for orchards is considered to be of the highest importance, and therefore all naturally sheltered grounds on hill sides are eagerly taken for orchards at a high rental. In the case of existing orchards I have no hesitation in saying that it would be found to be a profitable investment in any part of England to cut down a few of the outer trees and plant a shelter belt on the exposed quarters, for in many counties it is impossible to find the gently undulated surface that exists in Kent, and in the mildest part of England the frequent gales of wind, even with a high temperature, are the most dreaded of all atmospheric conditions, as they are far more fatal than frost. In forming new orchards the planter should precede his fruit-tree planting with additions to the existing shelter. It should not be so close as to prevent a free circulation of air nor shade the orchard; but, nevertheless, it should be sufficiently close to break cold currents of wind, and nothing is better for this purpose than tall trees, either evergreens, such as Scotch Fir, or deciduous as Poplars, Elms, or Chestnuts. I may mention that in this district, where Hop plantations are being superseded by fruit trees, the Apples are planted between every fourth or fifth row of Hops, only sufficient Hop hills being grubbed

up at first to allow of the trees being planted. All the rest are left, and poled in the usual way, and in this shelter the trees get up to a bearing size much faster than in open fields. Ultimately the remnant is grubbed up, and the soil sown with grass seeds for permanent pasture, to be fed off by sheep.

Preparation of the Ground.—Provided there is no stagnant moisture in the soil, draining will be worse than useless in orchards, for when the trees get large they are more likely to suffer from want of moisture than from an excess of it, as evaporation from the large surface of foliage is greater than the annual rain-fall can supply, and the soil on level rather elevated ground gets as dry as dust. In very low-lying positions, however, efficient drainage must be provided before planting takes place, or the trees will be covered with moss and lichen, and the young wood will fail to ripen, and fall a prey to the first severe frost that follows. Tile drains are sure to become choked with roots, but rubble drains, or those filled with a good depth of any hard material that is easiest procured in the neighbourhood, will last as long as the orchard itself. The drainage being completed, proceed to trench the soil at least 2 ft. deep. Old pasture land is about the best that can be selected for the purpose. Turn the top spit right into the bottom of the preceding trench; as this decays the turf makes excellent food for the main roots, and being generally rich inm anurial properties, it is able to support a clear healthy

growth for years without the addition of fresh manure, which, except on impoverished arable land, is not needed. The second or bottom spit will be brought to the surface, and the bottom of the trench should be dug over or well broken up with a mattock, removing any large stones as the work proceeds. In this district stone suitable for roads is plentiful at two or three spits from the surface, and therefore enough may be got out in many cases to pay for the trenching. This kind of work may be done in winter, when it is almost impossible to profitably employ hands at any other employment. Shallow soils, or where the subsoil is bad, must not be trenched in this way; but the good soil must be kept near the surface and the bottom spit merely loosened to help the drainage, and only trees grafted on surface rooting stocks can be profitably employed in such positions. But instead of planting late in spring it will be better to occupy the land with some light crop, and plant early the following autumn. If the land is poor it may be manured and ploughed, or forked over in the spring, and will be in excellent condition for planting in October as soon as the leaf begins to fall. In land that is light and stony a good quantity of marl or clayey loam should be worked into it at the time when the holes are made for planting. This will be of more lasting benefit to the trees than manure, which we find does most good applied as top-dressings. It then answers the twofold purpose of keeping the surface roots moist in times of drought, and being gradually worked

into the soil by worms and otherwise, it becomes available for food.

Filling up Existing Orchards.—As a rule new orchards are well planted, but in filling up existing orchards where trees have failed, many do not make anything like adequate provision for the future wants of the trees; merely digging a hole large enough to thrust the roots into will not do. A tree under such circumstances is not differently placed from a plant in a pot or tub, except that it does not get the unremitting care as to the daily supplies of moisture and other necessaries which the pot plant gets; consequently it either dies right out or remains stunted for years.

Wherever it is intended to plant single trees the soil should be taken out from 6 ft. to 9 ft. square. If on turf, lay the top spit back ready to go to the bottom of the hole when it is filled in again, but if left open for a month or two so much the better, so that if the bottom spit is dry it may get thoroughly moistened. Two spits deep should be thrown clear out and the bottom well broken up, and if of unsuitable soil some may be taken out and carted away, or spread on the surface of the orchard, for even the most unkindly soil will become good for surface roots after being exposed to the atmosphere for some time. In places where the subsoil is bad it will be found better to prevent the roots going straight down by putting in a hard foundation of pounded bricks and lime rubble formed into a concrete, than to attempt any remedial measures in the shape of

root lifting or root pruning. Having prepared the bottom of the hole, turn the top spit back again, Grass side downwards, and on this put at least a cartload of fresh soil to plant in; that may consist of parings from the sides of roads, chopped turf, and some thoroughly rotted manure, or the refuse from ponds or ditches; in fact, anything in the shape of new or unexhausted soil. An Apple tree should never be planted where another Apple tree has been taken down; it is better to follow stone fruits, such as Cherries or Plums, with Apples and *vice versâ*; for, as is well known, land may be rich in what one variety requires, and yet poor in what is necessary for another. Therefore, if it is intended to fill up an orchard with the same kind of fruits as those that grew there before, sufficient fresh soil must be introduced to give the young trees a vigorous start, trusting to top-dressings afterwards to keep them in good health.

Apples in Gardens and on Walls.—Where the Apple is grown in gardens on the Paradise stock, either as a dwarf bush, cordon, or in the many forms adapted for trellises, as good a preparation as regards the borders must be made as if Peaches, or any other choice fruits, were going to be planted, for unless the produce is to excel that from ordinary standard orchard trees, there will be no motive for planting Apples in gardens; but we know that the Apple is of all fruits capable of improvement, and any extra good culture bestowed on it is soon rewarded with extra fine examples of fruit. On the

Paradise stock there is no fear of the trees becoming over luxuriant, for their energies are directed to fruit bearing and forming fruit buds, and no prettier sight can be had in a garden than a quantity of these miniature trees loaded with finely swelled and beautifully coloured fruits. Provided the soil chosen for the fruit borders has not been previously exhausted by fruit trees, and does not require draining, the same preparation as regards trenching as for orchards will be necessary in the first place, but it may be more enriched with manure and more fresh soil may be added, for, unlike orchard trees on vigorous free stocks, there is little fear of these surface-rooting kinds growing, as I have said, too strongly. In this locality the soil is naturally well adapted for Apple culture, and consequently little preparation beyond trenching is needed, but in many parts, more especially where the soil is light and sandy, or where gravel crops up near the surface, considerable additions of fresh soil will be needed to make a good Apple garden. For tender varieties such as the white Calville and others that are grown in pots, there is nothing like a good stack of turfy loam dug off an old common or pasture that has been continually fed off with stock. This should be obtained in dry weather and stacked long enough to kill the grass roots, when it will make, when roughly broken up, an excellent compost. If from light lands, a portion of marl or heavier soil may be added, and a little charcoal or brick rubbish pounded fine; but manure will be best applied, as I have said,

as a top-dressing after the trees get a crop set on them, and in pots they can readily be helped when swelling their crop with stimulants in a liquid form.

Selecting Trees.—This is an important subject, and one which should always be performed in good time. Planting early in October is undoubtedly a great gain; if left until snow and frosts are upon us, it had better be deferred until the spring. I know from experience that young trees lifted and replanted while there is yet much of the latent summer heat in the soil make considerable progress in getting established before winter, and start off with far greater vigour in spring than those left until the sap is in motion before they are moved. The best trees to make really good specimens are those that have never had a check, for if they once get into a stunted state the bark gets hard and they never grow into handsome trees. It is better to plant young maiden or one-year-old trees than such as have been headed back time after time; select always those with shining, healthy stems, two or three years from the graft, for they are sure to give satisfaction when finally planted in the orchard, and for miniature trees for the garden select those that have been annually replanted, for being surface rooters on the dwarfing stocks they should have such a mass of wiry fibrous roots that they may be successfully moved at any time; and they should, too, have been carefully pinched, and be bristling all over with fruit buds. Second-rate trees obtained at clearance sales in the end of the season are dear

at any price; they occupy the same space as good trees, and take up valuable time to little purpose, for eventually they have to be replaced.

Marking out the Orchard.—Having the land in good condition for planting, and the trees ready for removal, we next proceed to mark out the ground by putting in a stake where each tree is to stand. The distance between the rows will be in part determined by the nature of the soil and the varieties to be planted, some kinds growing into much larger trees than others; also whether the orchard is to be entirely devoted to Apples or not, and eventually laid down in Grass, or kept cultivated and undercropped with bush or other fruits. On good land strong growing kitchen Apples should be at least 30 ft. apart each way, but if planted so that each alternate line intersects the other, or what is called the quincunx form, the distance may be reduced a little in the row, and between the rows as the heads, growing nearly circular, get proportionately more space in which to extend before meeting. In this locality the straight line system is most in favour, for even when planted up with bushes 6 ft. apart each way, the plough, harrow, or the horse-hoe may be easily used, thereby obviating the expenses incurred by manual labour. On the quincunx plan the distances may be 24 ft. apart each way, which takes three rows of bush fruits between each row of trees; in fact the distances are arranged to suit bush fruits. Thus dwarfs are planted 12 ft. or 18 ft. apart with one or two rows of bushes between them,

and standards 24 ft., 30 ft., or 36 ft. apart. I find it advantageous to plant alternate rows of sorts that form large spreading heads with such as either make little wood or are of erect habit of growth. For example, Blenheim Orange and Graham's Russet, which form very fine trees, may be alternated with Golden Pippins, Ribstons, or Margils, that do not take up half so much space, and that will be all the better for the shelter afforded by the stronger growers. I would particularly recommend keeping the sorts together—either a row or portion of a row according to the quantity required; it saves a good deal of labour in gathering to be able to go straight down a row instead of carrying the ladders about in order to discover each particular sort; the hardiest kinds should be planted on the exposed or boundary rows. Here we generally plant the Goff Apple or Northern Greening outside as a screen for tender dessert sorts. But whatever distance is decided on it should be borne in mind that there is nothing gained by overcrowding, by which the undercrop soon gets robbed of the necessary light and air; and as the trees approach mature age, if there is not sufficient space, the fruit on the lower branches will be deficient both in size and colour and comparatively worthless for market, as it is only the best examples that can be grown of their kind that are remunerative. Second-rate fruits are in but little demand, and they only tend to lower the character of home-grown produce. I may mention that the straight-line system of planting can only be recom-

mended on the score of its offering greater facilities for horse cultivation than the quincunx, and all growers are unanimous as to the beneficial effects of keeping the surface frequently stirred, not only to keep down weeds, but also for the sake of aërating the soil. If the orchard is not planted up with bushes, it is found advantageous to keep the soil cultivated and cropped for a few years with Potatoes or some other vegetable that permits the land to be manured and cleaned. The young trees undoubtedly make more rapid progress if the surface is cultivated, manured, and well done by for eight or ten years after planting than if laid down at once in grass. After that period there can be no question that it is best for the trees in every way to sow the land down with a good mixture of permanent grasses, for if fed off closely with sheep, the surface soil gets thereby well enriched, and the trees are healthier and more prolific than if continued cultivation is carried on, and the produce is sounder and keeps longer.

Mixed Fruit Gardens.—Besides orchards on grass, vast quantities of Apples are grown in what may be called ordinary fruit gardens—*i.e.*, gardens kept regularly cultivated and undercropped with nuts and bush fruits. The best way of planting these is to have rows of tall standard Apples 30 ft. apart, with an intermediate row of dwarf spreading bush trees planted in quincunx form, so that they get all the light that falls between the branches of the tall standards, the shady portions being filled

generally with cob nuts or filberts. Some kinds of Apples are especially adapted for dwarfs—Keswick and Manks Codlin, Lord Suffield and King of the Pippins being especially prolific when spurred in closely. This mode of planting is preferable to having the trees all on stems of one height; and where the land is entirely devoted to Apples, it is surprising the quantity that may be grown per acre, provided the trees are well supplied with manure, for even when spring frosts cut off the taller trees, the lower and more sheltered ones generally escape.

Trained Trees in Gardens.—During the last few years the old-fashioned standard Apple tree has been rapidly disappearing from kitchen gardens, the tendency now being towards having fruit and kitchen gardens separate, and as the old trees are rooted out, the orchard or hardy fruit garden is slowly but surely getting to be looked upon as an indispensable adjunct to every well arranged establishment. The only Apples suited for kitchen gardens are those worked on Paradise stocks, as in that way they are more fruitful and occupy less space than those on free stocks, that resent the hard pruning necessary to keep them within bounds. The old-fashioned espalier trees, planted 30 ft. apart, are now replaced by much more fruitful trees on the Paradise stock planted 15 ft. apart, these having the growth more equalized for fruit buds instead of useless spray, and a notable improvement is the substitution of stout wire trellises for crumbling stakes, the wires being easily tightened with the

radisseur. About seven shoots are trained, as in the ordinary form of espalier, horizontally, until the lower ones come within 1 ft. of each other; they are then turned up and trained vertically, so that each shoot is about 1 ft. apart, and the lower tier of branches keeps as vigorous as the others, and the trellis becomes much quicker covered than by the old plan. Dwarf pyramids 12 ft. apart make a good background for little bushes that may be successfully grown at 6 ft. apart, the soil of course being devoted exclusively to their roots, these surface rooting stocks depending very much on food being continually supplied to them in the shape of top-dressings. Single cordons may be planted 6 ft. apart for forming edgings for fruit-tree borders, and double cordons 12 ft. apart. On walls, when trained as oblique cordons, they are planted about 18 in. apart, and if one has good trained espaliers of the form just described, they may be transferred to the wall, which may thus be quickly furnished with bearing trees. If trained with seven branches, they must be put in 15 ft. apart, or if with five branches, 10 ft. apart will be sufficient, and if trained up to full bearing size on stakes, a great saving of wall space is the result.

Planting.—Everything being in readiness, the trees must be carefully lifted; take out a circular trench all round the tree two spits deep, so as to get well under the roots, and for the purpose of getting them out as entire as possible steel forks should be used. If to travel any distance, care must be

taken to bind the trees together with soft packing, such as hay or straw ropes, so that they cannot rub or chafe in transit, for neglecting this simple precaution is frequently the forerunner of canker. The roots must also be protected from the drying effects of the atmosphere, especially the young tender rootlets, which are the first to lay hold of the soil as feeders. When the roots are long unprotected, it need surprise no one if the trees start badly, for they have to make fresh rootlets before they can make any progress; therefore, be careful that neither the roots nor stems sustain injury. As soon as young trees are received from the nursery, see that they are securely laid in by the heels, and in planting begin with the hardiest or latest flowering sorts for outside rows. First of all with a sharp knife cut all broken or lacerated roots back to where they are sound and healthy, dig out the holes even on well trenched soil, larger than the roots will fill, and leave the soil rather higher in the middle where the tree is to stand than at the sides, so that the roots may slope gently down hill. If the soil is loose and liable to settle down, raise the tree a little above the level of the surface, so that, when consolidated, it may stand at the same depth at which it did before removal. The roughest soil or turf having been placed below the tree, proceed to fill in some nice fine loam or fresh maiden earth about the roots, gently shaking the tree that the finer particles of earth may work in close to every fibre, spreading out as the work proceeds all the roots towards the

extremity of the hole, and about equally all round, but if any difference is made, the strongest should be towards the side most exposed to the wind. Then fill in with soil to the desired height, consolidating all well as the work proceeds. The best condition of soil for planting is when it is neither sloppy wet nor dusty dry, but just moist enough to work well with the spade or fork without clogging. It can then scarcely be trodden too firmly. Although fruit trees delight in a good depth of friable earth, they do not like it too loose. When that is the case, the growth is sóft and pithy; land, therefore, which has been deeply cultivated will be improved for Apples by being pretty well consolidated about the roots, merely keeping the surface friable to prevent it from cracking.

Top-dressing.—This should be done directly the trees are planted, for in addition to its keeping the soil in a more equable state as regards moisture, it prevents latent heat from escaping, thereby encouraging root action. It is surprising how much frost a covering of 3 in. or 4 in. of partially decayed manure, put on, say, in October or early in November, will keep out of the soil, and trees thus mulched will start vigorously in spring. As the top-dressing decays, it will gradually get incorporated with the soil, and become food for the tender rootlets, that require feeding on the surface to keep them from descending into cold or ungenial subsoils. This is more especially necessary where the Apple is liable to canker, but it will well repay the trouble of

applying it, even in the most favoured localities. It is not absolutely necessary to supply rich farmyard manure for this purpose, for if the land is freshly broken up, the trees will probably grow strong enough at first, but partially rotted thatch or straw, leaf-soil, or such vegetable substances as will eventually become available as root food. Be careful, however, to avoid such as contain the seeds of docks, nettles, and other coarse-growing weeds.

Staking and Protecting the Stems.—In the case of tall standard trees, with stems from 6 ft. to 7 ft. in height, staking is of the first importance, and no time should be lost in getting them thoroughly secured, as wind-waving is not only to be dreaded for the damage that may arise to the head and stems, but also to the roots, which cannot make progress while there is such a strain upon them. The ordinary mode of driving one very large stout stake, at least 2 ft. into the ground and about 3 in. from the stem, answers very well in cultivated gardens, but if sheep and cattle are to be admitted, as is the case with orchards on grass, a more substantial protection must be provided, and for this purpose either a square or triangular fence must be built up, at least to the height of the stem, and 1 ft. away from it at the base, and rather more at the top; besides strong corner posts there must be durable rails of chestnut or oak, which will last for many years, and if the stem is first cased with haybands, and then tied crosswise in both directions, there will be no possibility of its getting chafed;

with single stakes, if the ties break, the head is liable to blow about, and the bark gets bruised by coming in contact with the sharp edges of the stake. The fences just spoken of can also be made rabbit-proof in places where game abounds by fastening one length of small mesh wire netting round the base; for although rabbits or hares may not be numerous or show any inclination to bark the trees while green food is plentiful, yet it is quite different if snow lies long on the ground; then they will quickly bark all the young stems within their reach, and do the trees irreparable injury. Therefore, it is best to have prepared strips of wire netting, just large enough to enclose the stem, and they may be spliced together and fastened to the stake, care being taken to remove them and replace them by larger pieces before the stem swells up tightly to them. Birch brushwood is largely used for covering the stems of young fruit trees. It is cut in the autumn as soon as the foliage drops, as if for broom making, and is applied at once. After the trees are staked, take a good armful of birch, place the but ends of it on the ground evenly round the tree, and tie it firmly with tar cord or twine, and neither sheep nor game will bite it. Then proceed to regulate it round the stem, adding more birch to reach its top, and tie securely at about every foot distance. As this gets dry and hard by exposure, it makes an excellent safeguard, and if examined every autumn, and fresh ties, and a casing of fresh birch put on, it forms a cheap and substantial shelter for

years. As regards half-standards or dwarfs, if they are not in exposed situations, they need not be staked, and unless game is likely to injure the bark, there will be no necessity on cultivated ground for applying any remedies against barking the stems. But when planted thickly, as dwarfs usually are, it will be best to have a rabbit-proof fence all round the enclosure, as besides the stem they will bark all the lower branches within reach. As regards wall trees, trained trellis trees, or cordons, I find it best to have them quite loose the first season, leaving staking, tying, and training to be commenced the following year. They should, however, be top-dressed, and treated in other respects as advised for orchard trees.

Pruning freshly planted Trees.—This is an operation on which very different views are held. The custom of cutting freshly planted trees down pretty closely has been practised so long that many feel convinced it must of necessity be right; nevertheless many very successful cultivators have of late adopted a totally different plan; they leave the shoots entire the first season, and my own experience is decidedly in favour of doing so, for the trees make a much larger proportion of leaf growth, and this causes corresponding activity in the roots. Therefore, where the roots are in proportion to the top growth when planted, as they will be in young plants that are carefully lifted and replanted, I would decidedly recommend leaving the top growth *entire*. Trees thus treated will be found to make

far more rapid growth when cut back the following year than those that are severely checked both above and below ground at one and the same time; for however carefully they may be transplanted the small feeding roots or spongioles must necessarily be broken. As regards pruning, modern ideas have greatly modified the necessity for such repressive measures as were formerly in vogue; in fact pruning is now looked on as a necessary evil, and the less it is employed the better; apple trees especially are liable to resent anything like severe pruning. In no case should any but small wood be cut off apple trees, or such scars formed with knife or saw that will not heal over the following season; with standards I would leave the shoots full length the first year, and prune back to the firmly ripened wood the following autumn. Pruning and replanting, potting, or in any way causing much disturbance to the roots, is now looked upon as mistaken practice. Pyramids, cordons, espaliers, and even bushes on the Paradise stock require but little pruning at any time, and most of that can be better done by pinching while the shoots are soft and green than at any other time. If the trees to be planted have been carefully tended in this respect they will be best left till they are in active growth before any pruning is attempted. In the following autumn, when the soil has become consolidated and the roots settled down to about their permanent level, they may be securely fastened to their trellises and pruned back to the well ripened wood, giving to each the outline

of the form which it is desired to take, always bearing in mind that the cuts to heal over quickly should be done with sharp tools. There is nothing like a good stout knife with a keen edge that will cut close to the stem when it is desirable to remove a branch entirely without injuring the bark of the portion to be left. Where snagged or notched pieces are left by careless pruning that cannot heal over, they generally die back and become the forerunners of unsound wood.

Pruning Orchard Trees.—Standards one year planted in a permanent position and well established at the roots will be by this time in good condition for their first and most important pruning, for the shoots left now will form the outline of the future tree. Presuming that the trees when planted were the sorts usually sent out from nurseries for orchard planting—viz., trees cut down once after grafting—they will now have heads consisting of five or six strong shoots left entire at planting time, and in addition thereto will be the growth made during the current year; but as this is usually neither strong nor well ripened, most growers cut back to well ripened wood of the preceding season. The branches are thinned out well, leaving such as point outward, and thinning the centre out well, but not so that too many shoots all start from the same point so as to form a cavity for water to lodge in when a large size has been reached. Better leave two or three tiers, each consisting of two or three shoots. From three to five shoots are plenty to leave at the first pruning

and when they break afresh two of the best leading shoots should be selected and the rest pinched in to form spurs. If left until winter and then cut back they give rise to a quantity of useless spray that might have been converted into fruit buds by timely attention, and the leading shoots will make all the more progress, for the stronger these are, and the better ripened by having plenty of light and air playing round them, the longer they can be left at the second winter's pruning. In respect to this various opinions are held, some allowing the head to grow as it likes after it has been once cut back; others again make it a rule to look over all their trees every winter, shortening the tips of the strong shoots and removing any pieces that may be crowding the centre, the head being kept evenly balanced. I am quite convinced that although good crops of Apples can be grown in both ways, yet by the latter plan one gets better shaped trees, and certainly an equal weight of fruit, which, if not so numerous, is certainly of larger size and of higher market value. It is the high-coloured apples that realize the best prices, and, therefore, in standard trees, the larger the surface exposed to sunshine, and the less the sap is diverted to inferior branches, the better will be the produce. Moreover, trees whose shoots are topped every year with a sharp knife or the secateur never need what the advocates of letting them alone call pruning—*i.e.*, cutting out several faggots of wood from a large tree—an operation that usually gives it a check from which it does not recover for several

years. After the trees get eight or ten years old I find the averuncator, or long-handled tree pruner, very useful, for by the aid of a pair of steps or tressels with steps on each side a man can quickly get over an orchard of young trees without putting the ladder against them at all. It is the shoots that rush upwards that need stopping in order to induce them to branch out into fruitful twigs and spurs. Some apples, such as Stone's or Loddington Seedling, that are noted for being nearly all flower buds and making scarcely any wood, can only be kept growing by just taking the tips off the shoots every year. If left unpruned they cease to make any young wood; and the same remark applies to some slow growing or tender apples, like the Ribston and Margil. These certainly make young growth more evenly over the entire surface of the tree when the shoots are tipped regularly every year. Young wood is needed to produce continuous crops of fine fruit. In all cases the centre should be kept open. A well-trained orchard tree should resemble an inverted umbrella, the ribs representing the main shoots, which should be cleared of spray; the latter does not answer any useful purpose, but the outer branches should be left moderately thick. In fact, in trees that have plenty of room to extend all round the outer branches require but little thinning. We clear the centre of the trees each winter, and cut out dead wood or weakly-growing branches that are being smothered or covered by the stronger growth of younger wood. The erect shoots at the top of the

tree are stopped, but even where that is not done a heavy crop brings them down to their desired position quite as effectually as any kind of training.

Pruning Dwarf Trees.—Where the outline of these is formed, all that is needed is to keep them in good fruitful condition by summer pinching. This not only reduces the necessity for much winter pruning, but it exposes the fruit to increased sunlight, thus improving both appearance and flavour. In the case of dwarf trees it is impossible for fruit to reach even the finish of which our climate is capable if the bushes are crowded with a thicket of spurs, and the whole of the young growth is left to shade the fruit, more especially in market gardens where tall standards are planted so thickly as to completely shut out the sun's rays from the dwarf or bush trees with which they are associated. If we are to keep our hold on the market the trees must have more room, and the pruning of dwarf bushes should be done with the view of producing finer fruit than they have hitherto done. If at the winter pruning the spurs were well thinned out, fresh spurs would originate from the base, and there would always be a succession of young fruitful spurs along the entire length of the main shoots. It is not advisable to pinch the shoots before their bases begin to get firm, or about the latter part of July, and then not closer than five or six leaves, as at the winter pruning they can be reduced to one or two buds. I find the secateur a useful implement for thinning overcrowded fruit spurs, and in the case of those

that are old and long-neglected, a small pruning-saw will be found best for removing them close to the stem, shaving off the rough edges with a sharp knife, so that the cuts may heal over readily.

Pruning Trained Garden Trees.—Having given full instructions in a former chapter as to the various modes of training now in use in gardens, it only remains to say that, having got them into form, it will rest with the pruner to keep them in a fruitful state by the judicious use of the knife. During these last few years this has been greatly assisted by summer pinching, and as the trees grown in gardens now-a-days are mostly on the Paradise stock, there is not anything like the disposition to make such a quantity of superabundant wood, more especially on the upper parts of the trees, that there was in days gone by, when the Crab or free stock did duty for all kinds of trained or untrained trees. Still, careful manipulation is required to keep trained trees in good condition as regards an equal distribution of vigour, more especially in the case of horizontally trained espaliers and cordons, and to a less extent in that of upright pyramids, the tendency of the upper branches being to monopolize more than their share of the sap. This must be remedied by persistent pinching of the uppermost shoots, allowing those less favourably situated to carry all the leaf growth they can, in order to maintain a proper balance in all parts of the tree; doubtless, however, in time all modes of training that militate against the well-being of the tree will be superseded; in fact,

they are so already. The old horizontal espalier is making way for the erect trained fan or oblique trained cordon.

Thinning the Fruit.—Where trained trees, whether on trellis, walls, or in pots, are grown, thinning ought to always form an important part of their culture, for without it the produce will not be much better than that from untrained trees. Who would expect fine grapes if the bunches were left unthinned? and who can expect fine apples if they are left in clusters, as they generally are on trees worked on dwarfing stocks? It is not advisable to thin severely at first, but all bunches should be reduced to one or two fruits as soon as they are fairly set, and when they have acquired sufficient size to see which will make the best fruits, enough for a crop should be selected, retaining those most advantageously placed for getting the full benefit of sunlight. Dropping of the fruit, or as it is called "running down," is an effort of the tree itself to reduce its over-abundant crop to reasonable limits, and barren years are caused more by exhaustion from over-cropping than from any other cause; therefore, if the crop is carefully thinned to what the tree can well ripen, the flower-buds for the following year will have a better chance, and the trees may be expected to carry a crop every year, unless some extraordinary visitation overtakes them. We are too apt to lay our losses in the way of crops to spring frost; it is a ready excuse, but do we always take full advantage of the means we possess

for overcoming the variability of our climate? If we can grow tenderer fruits that are natives of warmer climates, and that flower at a much more inclement season than the apple, surely there can be no insuperable difficulty in the way of having a crop every year.

Top-dressing.—This must not be done with a niggardly hand if good and constant crops are to be expected; in the case of orchards on grass, the feeding off with sheep is the readiest means of doing it both effectually and economically, and as the grass is allowed to get long when the fruit is ready for gathering, it keeps that which falls from getting bruised. By supplementing the grass feed, too, with roots, hay, and oil-cake, orchard trees may be kept in good health for an indefinite period, and thus treated they are not so liable to insect and other pests, and the closer the grass is fed off the better. In some cases pigs are substituted for sheep, and penned off in the same manner, and with excellent results as regards the trees. Cultivated orchards, on the other hand, must depend on the supply of manure given them at the winter dressing, and as such orchards are generally undercropped with bush fruits, it follows that the land thus heavily cropped must be made good, and that in the case of dwarf garden or trained trees a space must be kept solely for their support as wide as the average spread of the branches. Intermediate cropping can only be safely indulged in before young trees come into bearing; after the roots occupy the ground the sur-

face should be annually mulched with partially rotten manure as soon as the crop is set, and in autumn when the leaves are down they should be raked off with the exhausted material and buried elsewhere, so as to remove all dormant insect life from the surface soil.

Regrafting established Trees.—After all that can be done in selecting proper situations for orchards, and in getting the most approved varieties, and applying the most careful culture, some failures are sure to occur. Some sorts may refuse to be fruitful, others may be liable to canker or die back, while other sorts good at the time of planting may be superseded by newer sorts of greater market value. Soft light apples possess little market value. Heavy, solid apples not liable to bruise or show the marks of a little rough handling are at present in most request for culinary purposes, nearly all fruits being now sold by weight. In the case of dessert apples, high colour is a great point in their favour; therefore whole rows of trees are often headed down in winter for regrafting in spring with sorts that do well in the locality and that are popular in the market. In Kent old trees are considered to be so much more valuable than young ones, that they are thought worth regrafting as long as they possess a sound limb, for even if they only last a few years the effect of double or treble grafting invariably renders them so very prolific that they soon repay the labour, and also the loss of crop for a short period. Some kinds of hard sour apples are

planted in orchards solely for regrafting when they reach a large size, say eight or ten years' growth. The Goff Apple is grown in this way, to be grafted with Stone's, but it does well on any sour hard kind, and thus treated it makes a large tree much sooner than would otherwise have been the case. Old trees are invariably grafted on the crown or rind grafting system, and the grafts are put on shoots about the size of a man's wrist, which heal over and make much stronger unions than when grafted on larger limbs. After they have become united they are treated in all respects as young trees as regards forming the head; but as a rule they are so prolific that very little pruning is needed.

Regrafting trained Trees.—Since the introduction of miniature trees on the Paradise stock little necessity exists for regrafting old or unfruitful specimens, but it sometimes happens that in the case of trained pyramids in lines forming a background for walks in fruit or kitchen gardens one or two may prove unsatisfactory, and then regrafting has to be resorted to, and if done towards the points of each shoot a prolific tree is formed in two or three years' time. I have sometimes, too, found it advantageous to convert pyramid trees into open bushes by grafting the points of the lower tier of branches, leaving the top of the tree for a year or two until the grafts got fairly into growth, when I cut the entire top above the tier of branches away, a spreading bush tree being the result. All fastenings and ties are liable from neglect to cut the bark, especially in the

case of young trees swelling rapidly, and therefore must often be examined. In labelling be careful to avoid wire, for if put on main stems it is liable to get embedded in the bark before it is observed. Rather have a rough ground plan of the orchard or garden made, every tree being indicated and its name plainly attached to it, for labels get lost or misplaced and cause endless confusion.

Gathering and Marketing.—Before we proceed to discuss the mode of gathering and packing, &c., for market, I would like to direct attention to a few matters that greatly check the development of hardy fruit culture in this country. In this district land capable of growing apples equal to any that can be produced elsewhere can now be had at a rent which occupiers could afford to pay were they not overweighted with taxes and tithes, of which land gets far more than its share. There is, however, some hope of a decided stand being made against what is termed the extraordinary tithe, a burden that sadly requires readjusting so as to meet the altered circumstances of the times in which we live. There is yet another thing that checks fruit production even more than the extraordinary tithe, and that is the means of getting produce at a minimum cost from the grower to the consumer. At present the problem is not how to grow apples in quantity, but how to get them to densely populated districts at a price within the reach of the working classes. It is not saying much for cheap transit and market accommodation when I state that it takes 60 per

cent. off the market price of apples, or more than one-half, to pay railway charges and salesman's commission; yet this has happened for months past in the case of what are called common culinary apples. Surely there is room for our railways to revise their scale of charges, and salesmen their commission. With apples at 2*s.* per sieve, a price at which many thousands of sieves were sold from this locality, 6*d.*, or 25 per cent., went for railway charges, and 6*d.*, or 25 per cent., went for salesman's commission, the grower having to pay for empty baskets being returned, labour, rent, and every other expense. This is by no means an exaggerated statement. Could not railways carry a bushel sieve of apples at a less cost than 6*d.* for forty miles? And could not salesmen afford to charge less than 6*d.* on a 2*s.* bushel of apples? Why not have a scale of charges, say 10 per cent.? Apples are generally sold by auction some time between the time when the crop can be fairly estimated and before the earliest apples are fit to gather. During the present season prices have ranged from £15 to £25 per acre for good orchards in full bearing, and consisting of the right sorts, the majority ranging from £18 to £20 per acre, but the crop has been exceptionally heavy and prices proportionately high. The average for ordinary years is from £10 to £15 per acre. Few crops on the whole pay better than a good orchard of apples. There are crops, as, for instance, hops, that yield a large return some years, but on the other hand the

expenses of cultivation are heavy, and failures from blight and mould frequent.

The Gathering Season commences about the 1st of August, and by that time a good supply of empty sieves and half sieves sent down by the salesmen are in readiness. These are sent down in bundles of eight, four being fastened together as closely as possible, by means of a cord through their rims, and four are turned bottom upwards and fastened to these, an arrangement occupying the smallest possible compass convenient for loading both on trucks and on the vans used for conveying them to and from the railway stations. The price charged for empties, 6*d.* per bundle for sieves, and 4*d.* for half sieves, from London to Maidstone. A sieve is supposed to hold eight gallons ordinary measure, but it contains generally about seven gallons, for as sieves are sent packed so as to stand one on the other, they must not be more than full to the rim, or slightly raised in centre. Ladders for gathering are provided of various heights to suit the trees; they are made as light as possible compatible with safety; they consist of the best seasoned foreign poles sawn down the centre and made wider at the bottom than ordinary ladders, and very tapering at the top. Heavy ladders not only bruise the branches, but are difficult to move, as the gatherers carry them erect round the tree, or from tree to tree. Bags made of stout hop-pocketing material, with two straps to go over each shoulder and a string or buckle across the chest, are used for gathering.

Thus equipped, the operator can use both hands, and will, as a rule, bring down each time he dismounts enough to fill a bushel sieve, except in the case of very choice sorts for storing, when only half the quantity is brought down for fear of bruising the fruit. The gatherer is also provided with a strong stick having a crook at one end for drawing the branches not otherwise within reach towards him. This he hooks on one of the staves of the ladder. This work is generally performed by ordinary garden labourers employed at from 2*s.* 6*d.* to 3*s.* per day. But in some cases it is done by casual hands at so much per sieve, according to the crop. It requires strong, active men to perform the work of carrying a fifty-round ladder erect, and set it in a tree so that it bears equally its weight on several branches without injuring any of them, and so that the crop can be reached without much moving of the ladder. Men that have been accustomed to this work from boyhood will bring down double the quantity of fruit that a casual hand will do. The apples must not be pulled off, but removed by a sharp jerk, so as to detach the stalk, an operation easily done when the fruit is nearly ripe, but vast quantities of apples are gathered before they are fully grown, and more especially the earliest of kitchen apples. The Keswick Codlin, a certain and abundant cropper, is grown in great quantities about Maidstone; the trees generally give two good gatherings. The first, from the middle to the end of July, consists of the most forward from the sunny side and open branches,

leaving the others for a late crop; and taking the average of years I find the market price generally starts at 4*s.* or 5*s.* per sieve, and drops to 2*s.* or 2*s.* 6*d.*, when other sorts get plentiful, at which price, as they barely return 1*s.* clear, they are generally left until the end of the season, when they are worth 1*s.* per sieve for cider, or jam and jelly, the Keswick Codlin being about the best sort for these purposes, being clear and transparent. Lord Suffield is another popular early sort, and Stone's apple is really very early, but always realizes good prices when fully grown. This is of such large size that from fifty to seventy apples fill a sieve, and on an average are worth 1*d.* each wholesale. It takes a man with some experience of packing to get these large apples fitted in so that they do not move during the rough handling they get by rail and otherwise on their way to market. Dessert apples are generally begun with Juneatings, Kerry Pippins, and that favourite of London retailers, the brilliant Quarrendens; the higher the colour, the higher the price. These are usually sent in half-sieves; they realize 2*s.* 6*d.* or 3*s.* each, and pay very well. There are, however, several new sorts that promise to become popular, notably, Mr. Gladstone, red, striped with yellow, very showy, good in flavour, and ripe in July; and Worcester Pearmain, a lovely apple of medium size, brilliant colour, and of exquisite perfume, ripe in August and September. This is one of the apples of the future, for I may mention that really good apples realize fair prizes, even when

common ones are a drug in the market. Ribstons, Margils, and Golden Pippins always realize good prices. Soft-fleshed sorts that have little weight and show bruises easily do not pay. Cellini, an excellent apple in private gardens to gather and use from the tree, is useless as a market sort; and many others might be enumerated. Many send all their crop direct to market as they become fit for gathering; some from having no convenience for storing, and some from thinking that the extra price realized in the winter months does not compensate for the extra labour involved or losses in storing. When sent direct from the trees, the gatherers empty them into the sieves, a packer follows and tops them up, covers them with paper, and then a capping of soft straw or litter; a mixture of hay and straw makes good packing. This is secured by split ash, hazel, or chestnut rods previously prepared, put crosswise two to each basket, and pushed through just under the rim, the ends being cut off close. They are then labelled and sent to market, and as a rule are sold the following day.

Storing Apples.—Those who store late-keeping sorts of apples for supplying the markets in winter, do so in the simplest and least expensive way possible, buildings never designed for fruit storing being brought into requisition in seasons like the present. Places used largely in this locality are barn floors no longer in much request for threshing and the ground floor of hop kilns, or oast houses as they are called, the lofts and drying rooms being useful for sorts that are marketed before Christmas,

and the ground floor for those that keep until spring. They are put into large heaps and quite buried in clean oat straw, merely leaving them open the first month after gathering to allow any exhalation emitted by them to pass off. Such kinds as Wellington, Graham's Russet, Golden Knobs, and Winter Queening or Northern Greening, if gathered dry and stored in good condition, will keep for months with scarcely any loss. They are covered up well in case of frost, but on the ground floor they are far safer than in any kind of upper storey, and doubtless the moisture that is constantly rising keeps the apples from any appreciable loss on account of shrivelling. If by chance the frost gets at them, it is best to let them remain undisturbed and closely covered up until some time after the frost has gone. Some sorts are but little affected by frost, while others are quite spoilt by it. It is not advisable to try to keep apples very late in the season, for when forced rhubarb comes into market and gets cheap, the season for old apples is practically over. A month before and a month after Christmas is the time when growers find the best market for the bulk of their keeping sorts of apples.

Gathering and Storing for Private Use.—An apple room for keeping a supply of fruit for the longest possible period must be constructed so as to be capable of resisting sudden fluctuations of temperature, and although it requires ample ventilation both at bottom and top, yet the ventilators require to be carefully fitted, so that the house can be closely

shut up in case of need, as after the fruit has been stored some time the closer and freer it is from draughts or currents of dry air the better. A thick coating of straw or reed thatch is preferable to slates, tiles, or any other roofing, and there should be double walls or an air chamber all round, as an equable temperature is of the first importance, rapid changes not only inducing decay, but causing it to spread quickly. If any one wishes to put this to a practical test, let him pick up some windfall or bruised apples, and place them in a close room, and leave an equal quantity lying on the grass under the tree. He will find at the end of a week or so that those indoors will be nearly all rotten, while those on the cool grass will be scarcely changed at all. The apple room should be fitted up with shelves in tiers for the choice fruit that may be put in single layers, but the hard-keeping kitchen apples may be put in bins or divisions on the floor. The best time to gather apples for storing is during the month of October, when nearly all late sorts will be found to part freely at the footstalk by gently turning them on one side; they must be carefully handled, and the baskets should have some kind of soft lining to prevent bruising if they have to be carried far, but if the trees are near the store-house we find it best to carry them in the gathering bags previously mentioned, and to lay them gently in the places assigned to them; the larger they are the more liable they are to bruise. I need scarcely say that if possible they should be quite dry when

gathered, and on no account must the footstalk be pulled out, or it will induce decay. To supply a private family, a succession of sorts that will come in for both kitchen and dessert is of the first importance, and sorts that are useful for both kitchen and dessert should enter rather largely into the list, so that if one fails, others may be available. As a rule, the best dessert apples, if large enough, are good kitchen apples as well. Keep using the sorts as they become ripe, and remove all decaying ones as soon as observed, so as to keep the atmosphere sweet. Give air at the top, so as to keep the internal temperature as uniformly low as possible. If any dessert apples are required to ripen quicker than they come on in the fruit room, pack them in boxes and remove to a warmer room or closet, as required. In fact, for the benefit of late keeping sorts it is best to remove ripe fruit to another compartment, as what we call ripeness is close to the first stage of decay, and the exhalations arising from fruit stored in quantity are liable to affect the quality of the remainder. Moreover, it generally happens that in the first part of the winter apples have to be stored in thicker layers than they should be, and as the early kinds are used the later ones can be given more room. In the case of very late keeping sorts I would always bring them down from the top shelves to as near the ground floor as possible, as there is, as I have said, always a certain amount of moisture rising therefrom that keeps the fruit from shrivelling. Any very choice kinds may

be wrapped singly in tissue paper and packed in single layers in shallow boxes. When the building in which they are stored is not frost proof, the best covering is soft straw, which, if thoroughly dry, will absorb superfluous moisture and still keep thoroughly sweet. Hay gets musty if damp and imparts a bad flavour to the apples. For choice kinds, soft dry moss is as good as anything, each fruit being wrapped in tissue paper or cotton wool, and then placed in layers in a bed of soft moss. The less fruit is handled or moved the better it will keep.

American Plans.—Always, whether in barrels or layers, when the temperature is rising so that the surrounding air is warmer than the apples, condense moisture on the surface and become quite moist and sometimes dripping wet, and this has given the common impression that they "sweat," which is not true. As they come from the tree they are plump and solid, full of juice; by keeping they gradually part with a portion of this moisture, the quantity varying with the temperature and the circulation of air about them, and being much more rapid when first picked than after a short time. By parting with this moisture they become springy or yielding, and in a better condition to pack closely in barrels; but this moisture never shows on the surface in the form of sweat. In keeping apples, observes J. S. Woodward, in the *New York Tribune*, very much depends upon the surroundings; every variation in temperature causes a change in the fruit, and hastens maturity and decay, and we

should strive to have as little change as possible, and also have the temperature as low as possible, so that the apples do not freeze. Then, some varieties keep much better in open bins than others, for instance, the Greening is one of the best to store in bins. A very good way for storing apples is to have a fruit room that can be made and kept at from 32° to 38°, and the air close and pure. Put the apples in slatted boxes, not bins, each box holding about two or three bushels, and pile them in tiers so that one box above rests on two below, and only barrel when ready to market; but this is an expensive way, and can only be practised by those with limited crops of apples, and it is not at all practicable for long keeping, because in this way they lose moisture much more rapidly than when headed close in barrels, and become badly shrivelled.

All things considered, there is no way of keeping apples quite so good and practicable as packing in tight barrels and storing in cool cellars; the barrel forms a room within a room, and prevents circulation of air and consequent drying and shrinking of the fruit, and also lessens the changes of temperature, and, besides, more fruit can be packed and stored in a given space than in any other way. The poorest of all ways is the large open bin, and the objections are, too much fruit in contact, too much weight upon the lower fruit, and too much trouble to handle and sort when desirable to market. It was formerly the almost universal custom in western New York to sort and barrel the apples as fast as picked from

the trees, heading up at once and drawing to market or piling in some cool place till the approach of cold weather, and then putting in cellars. By this method it was impossible to prevent leaves, twigs, and other dirt from getting into the bin, and it was difficult to properly sort the fruit, and, if well sorted, occasionally an apple, with no visible cause, will entirely and wholly rot soon after picking. Some varieties are more liable to do this than others, but all will to some extent; this occurs within a week or ten days after picking, and when barrelled these decayed apples are of course in the barrels, and help to decay others. Although packed ever so well and pressed ever so tight, the shrinking of the fresh-picked fruit soon makes them loose, and nothing is so bad in handling apples as this. Altogether this was a very untidy method of handling apples, and has been entirely abandoned for a better.

The best method depends a good deal upon the quantity to be handled; if only a few hundred barrels they can be put in open barrels and stored in a close, dry building. Place empty barrels in a cart; take out the head and put it in the bottom of the barrel; on picking the apples, put them withou sorting directly in these barrels, and when a load is filled, draw to the building and place it in tiers on end along one side of the floor. When one tier is full lay some strips of board on top and on these place another tier of barrels; then more boards and another tier; two men can easily place them three tiers high, and an ordinary barn floor will in this

way store a good many barrels of apples. Where many hundreds or thousands of barrels are grown, it is a good plan to build houses or sheds in convenient places in the orchards for holding the apples as picked; these are built on posts or stones about 1ft. from the ground; floors, sides, and ends should be made of strips about 4 inches wide and placed 1 inch apart, and the roof should project well on every side. The apples, as picked, are drawn to these in boxes or barrels and piled carefully on the floors about 3ft. deep. Where these houses are not provided, the next best way is to pile the apples, as picked, on clean straw under the trees in the deepest shade to be found.

After lying in any one of these positions about ten days they should be carefully sorted and packed in clean barrels, placing at least two layers on the bottom of the barrels, with stems down; after this fill full, shaking moderately two or three times as the filling goes on, and, with some sort of press, press the head down so that the apples shall remain firm and full under all kinds of handling. Apples may be pressed too much as well as too little. If pressed so that many are broken, and badly broken, they will soon get loose and rattle in the barrels, and nothing spoils them sooner than this. What we want is to have them just so they shall be sure to remain firm, and carefully shaking so as to have them well settled together has as much to do with their remaining firm as the pressing down of the head. After the barrels are filled and headed they

should at once be placed on their sides in a barn or shed, or in piles covered with boards from sun and rain, or if a fruit-house or cellar is handy they may at once be placed therein; the object should be to keep them as cool and at as even a temperature as possible. In all the operations of handling apples, from picking to market, remember that carelessness and harshness always bruise the fruit, and that every bruise detracts much from its keeping and market value.

A German Experiment.—A set of experiments made recently in Germany, by Sorauer, are interesting, as bearing upon the question whether winter apples can best be kept in a dry or a damp cellar. Sorauer premises that while there is no longer any doubt in men's minds that light and warmth had better be excluded in order that apples may be kept fresh and be hindered from becoming over-ripe, there is still a wide diversity of opinion as to whether damp or dry air is most favourable for the preservation of the fruit. To test the question he experimented upon several kinds of apples, particularly the Winter Golden Pearmain. Three separate lots of the apples having been weighed out, one lot was spread on shelves in an ordinary fruit cellar, another was kept in air from which moisture had been pretty thoroughly removed by means of chemicals, and the third lot in air that was completely saturated with moisture. On re-weighing after the lapse of some time, it was found that the apples kept in the air of the cellar had lost three

and a half per cent. of their weight; those kept in dry air almost eight per cent.; while those kept in air saturated with moisture had lost but little more than one-half per cent. It could not be perceived that any advantage was gained by using the dry air. On the contrary, the apples kept in the dry air shrivelled more than the others, and manifestly ripened more rapidly, so that in the later months of the experiment they were less sweet than the others, and a larger proportion of them decayed. Not a few became rotten-ripe, and this, in spite of the fact that, as was to be expected, rather less mouldiness appeared, as time went on, upon the fruit kept in the dry air than upon that in the air which was saturated with moisture. The importance of hindering the fruit from coming too quickly to full maturity was further illustrated in these experiments by the fact that the ripest—that is the most matured apples at the beginning of the experiments—were the first to decay, which also was what might have been expected. Some other experiments were made to determine how much influence the natural varnish on the skin of apples has upon their preservation. To this end, the waxy covering was removed from a number of apples by gently rubbing them with a mixture of alcohol and ether, then washing them with very diluted potash lye and finally with much water. It was found that apples thus treated lost five per cent. more of their weight by evaporation in a given time than apples which had been left in their natural condition and similarly stored. As

regards this point, Sorauer is in full accord with the popular conviction that the unhurt skin of an apple is to be regarded as the chief protection against decay. He found that apples whose waxy coating had been left unharmed did not decay for a long time after he had smeared them with mould, although they were left all the while in a moist and warm place.

SAND PACKING.—Still other experiments were made to test the question whether there is any advantage in packing apples layer by layer with straw or sand. Four kinds of apples were packed away in glass vessels, half of each lot in chopped straw and the other half in dry sand. It appeared not only that the sand was decidedly preferable to the straw, but that the use of straw is not to be commended. Although there was no loss through decay of the apples packed in the straw, they nevertheless shrivelled more than apples which were lying free in the cellar, and they acquired a musty taste from the straw as it became damp. The use of dry sand, on the other hand, seemed to be advantageous, since the fruit packed in it retained an uncommonly fresh appearance and excellent flavour, and promised to keep in good part until July. The sand-packed apples lost only about half as much water by evaporation as those which were lying free upon the shelves; they were almost wholly free from mouldiness, and when one of them happened to decay it did not infect the others. Even those apples which had been bruised did not decay any more rapidly

than the sound fruit, provided that the skin had not been broken. Other apples were wrapped in tissue paper and compared with those left uncovered, both in a dry chamber and in the cellar. No advantage was derived from the paper, excepting in the dry room, for in the cellar mould developed itself more rapidly upon the apples wrapped in paper than on those which were lying free.

MAIN POINTS IN STORING.—It seems plain that the main points to be considered in storing apples are, to keep the temperature of the room so low that the fungi which cause decay cannot flourish, and to have the air of the room moist enough to hinder the fruit from shrivelling. If the storehouse were warm, moisture would doubtless be injurious, since the conditions would be favourable for the propagation of fungi; but if the room be cold enough to hold the fungi in check, moisture will do good rather than harm.

Apples for Exhibition.—We have now potato shows; therefore, why not apple shows? If an apple show were only once started there would be no question of its success and continuance. Those who take an interest in having apples fit for exhibition generally grow a lot of young trees grafted on Paradise stocks and treated very liberally as regards soil and top-dressing. The crop is thinned very severely, and the shoots carefully pinched so that the fruit gets its full share of nourishment, and the leaves are turned aside to let it get fully coloured. Each fruit is enclosed in a muslin bag or small net

like a cabbage net; that saves it from being bruised if it drops, and keeps birds from picking it at the stalk. These are preferable to muslin bags, as they admit the sun's rays to colour the fruit, a most important thing with apples, either for sale or exhibition. They are gathered and stored like other choice kinds, and are handled and packed as carefully as eggs would be, and any one interested in apples that saw the collections from this locality at Hereford, or more recently at South Kensington, will, I am sure, admit that there is ample room for improvement in apple culture. Taking the country generally into consideration, success in this or any other speciality is not the result of chance, or attributable to soil or climate, but rather to unremitting attention to all the minor details of culture that the subject taken in hand is found to require.

Culinary Apples.—On the proper selection of varieties suited for culinary purposes, whether for market or private use, depends one of the most important points relating to apple culture; no matter how favourable other conditions may be, success may be completely frustrated by planting in open orchards, sorts only suited for sheltered gardens. Of the many sorts in cultivation, but few are fit for all sorts of positions and modes of culture. For market purposes it is more profitable to grow large quantities of well-known kinds than to encourage collections. In the market the demand early in the season is for Codlins, Stone's Apple, Lord Suffield, or some equally well-known sort; in winter the demand is

for Wellingtons, Russets, Queenings, Blenheims, or some equally distinct kinds. Old sorts—*i.e.*, those that have stood the test of time—are the greatest favourites; but now, when a lively interest is being taken in hardy fruits, we may look for a more decided advance in the raising of new sorts. The following list contains kinds of well-tried excellence, both as regards quantity and quality of produce, and as a good dessert apple is generally a good culinary apple, if of large size, preference should be given to such sorts as are available for either purpose :—

Admirable (*Small's*), 1 size, 1 quality. A very fine kitchen apple, in use in November and December. Skin, lemon yellow, free bearer, and especially adapted for dwarfs.

Alfriston, 1 size, 1 quality, irregularly ribbed. Skin, greenish yellow, an excellent keeper, and a kind that should be in the most limited collection. January to April.

Alexander, or *Emperor Alexander*, 1 size, 1 quality, a showy apple, very large, and brilliantly coloured, making a beautiful dish for dessert. Very juicy, good as a standard, dwarf, or cordon. On young trees the fruit attains a great size. September to December.

Atkins' Prize, or *Atkins' Seedling*, a medium-sized apple. Great bearer, tree hardy. November and December.

Allan Bank Seedling, 1 size, 1 quality. An excellent variety for northern counties. Very hardy and free.

Annie Elizabeth, 1 size, 1 quality. Very firm fruit; will keep well until apples come again.

Baldwin, 1 size, 1 quality. A very showy apple, in use from November to March. Largely imported from America. Available for dessert.

Beauty of Kent, 1 size, 1 quality. Vigorous grower, and very prolific; one of the very best for making fine orchard trees. October to February.

Beauty of Hants, 1 size, 1 quality. A magnificent apple for any purpose, second, indeed, to none either for kitchen, dessert, or exhibition. November to February.

Bedfordshire Foundling, 1 size, 1 quality. A very vigorous grower, and prolific: one of the best. November to March.

Baron Ward, 2 size, 1 quality. A very fine culinary apple, prolific, good keeper. January to May.

Belle Dubois, 1 size, 2 quality. One of the largest apples grown, prolific, and very useful, either for culinary purposes or for exhibition. November to March.

Besspool, 2 size, 1 quality. A prolific sort, and good market fruit, or for kitchen use; keeps well. January to March.

Burr Knott, 1 size, 1 quality. A very prolific hardy apple. November and December.

Beefing (*Norfolk*), 1 size, 2 quality. A very good cropper and keeper; one of the best for travelling, not being easily bruised. January to March.

Beefing, Striped, 1 size, 1 quality. A Norfolk

apple like the preceding, but of better quality; an excellent keeper, and a desirable variety. October to May.

Belle Joseph, 1 size, 1 quality. A large, handsome, very prolific kitchen apple. October to December.

Brabant Bellefleur, 1 size, 1 quality. A very handsome apple, hardy and prolific. October to March.

Blenheim Orange, 1 size, 1 quality. One of the finest apples in cultivation, being well adapted either for kitchen, dessert, or exhibition; first-rate for baking—an apple, in short, which ought to be in every collection. November to February.

Betty Geeson, 1 size, 1 quality. A very desirable apple, well suited for dwarf bush trees. December to March.

Bough Apple, or *Large Yellow Bough*, 1 size, 1 quality. A valuable, hardy, and prolific apple. August.

Catshead, 1 size, 1 quality. Very large, irregular-shaped fruit; an old, but useful apple. November to February.

Cellini, 1 size, 1 quality. A very prolific apple; a good grower, and useful either for kitchen or dessert, but too soft and light for market. For small private gardens it is one of the very best. October to December.

Cox's Pomona, 1 size, 1 quality. A very handsome apple, of great excellence, and one which makes a good orchard tree. October.

Cobbett's Fall Pippin, 1 size, 1 quality. An excellent large apple, with white and tender flesh. November to February.

Codlin (*Keswick*), 2 size, 1 quality. Colour, pale lemon yellow; very juicy, excellent for jelly. Tree hardy, good grower, and extraordinary prolific; in fact, in all sorts of positions it is one of the few apples that carry a crop every year. If I had only room for one apple tree it should be Keswick Codlin. August to October.

Codlin (*Manks*), or *Irish Pitcher*, 1 size, 1 quality. Very prolific, and one of the very best for dwarfs; a favourite market apple. August to October.

Codlin (*English*), 2 size, 1 quality. A very prolific variety, and one which succeeds in soils where many fail. August.

Codlin (*Kentish*), 1 size, 1 quality. Very prolific, vigorous grown, and useful kitchen sort. August to September.

Codlin (*Dutch* or *London*), 1 size, 1 quality. Very useful kitchen or market sort. August to September.

Codlin (*Carlisle*), 2 size, 1 quality. Very prolific, healthy, well adapted for dwarfs. August to December.

Codlin (*Winter*), 1 size, 1 quality, and an excellent keeper. Tree very prolific and healthy, October to February.

Cogswell, 1 size, 1 quality. A very useful sort, either for kitchen, dessert, or market. December to March.

Costard, 1 size, 1 quality. A good sort. Tree hardy and prolific, even in the north. October to March.

Crab (*French*), 1 size, 1 quality. One of the best and latest keeping apples grown. Skin very dark green, turning yellow when ripe. January to June.

Crab (*Minchall*), 2 size, 2 quality. Very prolific, hardy apple; suitable for ungenial situations.

Deux Ans (*Hambledon*), 1 size, 1 quality. A very valuable late keeping apple, forming very fine trees as standards. Skin, greenish yellow, streaked with red and russet on the sunny side. Very much grown in Kent; known as Graham's Russet. December to May.

Devonshire Queen, 1 size, 1 quality. A fine, large, and very beautiful apple; good for culinary purposes. October.

Domine, 2 size, 1 quality. Flesh, white and tender. A very prolific, useful variety. December to March.

Duchess of Oldenburgh, 2 size, 1 quality. A Russian apple; very popular for market, and a prolific, useful sort, bearing freely in quite a small state; well adapted for orchards or for private gardens; known also as Borovitsky. September.

Duke of Wellington, or *Dumelow's Seedling*, usually called *Wellington*, 1 size, 1 quality. One of the very best late market apples; very full of juice, and keeps well without shrivelling. November to March.

Dutch Mignonne, 2 size, 1 quality. An excellent variety for private gardens or market, and equally useful for culinary or dessert purposes. December to April.

D. T. Fish, 1 size, 1 quality. A very large, handsome kitchen apple, worthy of extensive cultivation. November to January.

Early Julien, 2 size, 1 quality. An extraordinarily prolific sort in quite a young state. Very popular in market gardens, both as a standard and a dwarf. August.

Echlinville Seedling, 1 size, 1 quality. A very prolific sort, and very popular. October to January.

Fall Pippin, 1 size, 1 quality. An excellent American sort, fit either for dessert or kitchen. October to November.

Flander's Pippin, 1 size, 1 quality. A large, excellent sauce apple; one of the oldest sorts. October to December.

Flower of Kent, 1 size, 1 quality. A very fine sort for orchards, making large trees; has been cultivated in Kent for hundreds of years. October to December.

Fillbasket (*Kentish*), 1 size, 1 quality. A splendid apple, yellow streaked with red; of pendulous habit; making a graceful tree; one of the very best sorts in cultivation. November to January.

Forge, 2 size, 1 quality. A very free and constant bearer; extra good as dwarf tree. October to January.

Farleigh Pippin, 2 size, 1 quality. An excellent prolific sort; useful for dessert or kitchen. January to April.

Farmer's Seedling, 1 size, 1 quality. A very fine prolific sort, suitable for market. December to April.

Frogmore Prolific, 1 size, 1 quality. A very free bearing useful sort, raised by the late Mr. Ingram, at the Royal Gardens, Frogmore. September to December.

Formosa, 2 size, 1 quality. Useful either for kitchen or dessert; very prolific. November to January.

Golden Noble, 1 size, 1 quality. A very large and truly excellent apple, a spreading grower and free cropper; one of the very best of old sorts. October to March.

Golden Spire, 1 size, 1 quality. A prolific and constant cropper; now very popular as a market sort, and equally useful in gardens. September and November.

Gooseberry Pippin, 1 size, 1 quality. An excellent late-keeping apple; one of the best. November to July.

Grand Duke Constantine, 1 size, 1 quality. A Russian apple, beautiful and good. September.

Grenadier, 1 size, 1 quality. A handsome yellow fruit, very prolific and hardy. October to November.

Gravenstein, 2 size, 1 quality. A first-rate kind for jelly making or other culinary purposes; also useful for dessert; a good orchard variety. October to November.

Greening (*Northern*), 2 size, 1 quality; free, very hardy and prolific, a certain cropper; favourite market kind for outside rows in orchards. November to April.

Goff (*Orange*), 2 size, 2 quality. An extraordinarily prolific kind, very hardy, making a first-rate stock on which to graft tender sorts; very largely grown for the jam makers. December to March.

Greening (*Rhode Island*), 1 size, 1 quality. Free growing hardy American sort. November to February.

Greening (*Yorkshire*), 1 size, 1 quality. An excellent hardy late-keeping variety. October to January.

Hanwell Souring, 2 size, 1 quality. A first-rate kitchen or market variety. December to March.

Harvey, or *Doctor Harvey*, 1 size, 1 quality. An excellent and certain cropper, largely grown in the eastern counties. October to January.

Harvey's Wiltshire Defiance, 1 size, 1 quality. A very fine culinary apple. November to January.

Hawthornden (*Old*), 2 size, 1 quality. One of the oldest and most trustworthy apples in cultivation; excellent for dwarfs in small gardens; very prolific. September.

Hawthornden (*New*), 1 size, 1 quality. Much larger than older variety, longer keeper, and an excellent market sort. December to January.

Hoary Morning, 1 size, 1 quality. A large handsome apple; tree spreading; very prolific. October to December.

Hollandbury, 1 size, 1 qualtity. A large and excellent apple. A great favourite in market gardens. November to January.

Hollow Core, 2 size, 1 quality. A useful market sort. September.

Imcomparable (*Lewis's*), 1 size, 1 quality. A handsome market apple; makes fine trees. October to January.

Jolly Beggar, 2 size, 1 quality. A prolific early apple; excellent for dwarfs. August to October.

King (*Warner's*), 1 size, 1 quality. One of the very largest apples, and a good keeper; excellent either for market or private gardens. November to March.

Lady Derby, 1 size, 1 quality. A prolific apple; tree hardy and a great cropper. August and September.

Lady Henniker, 1 size, 1 quality. A large, handsome culinary apple of extra good quality; raised at Lord Henniker's, in Suffolk. October to February.

Lord Suffield, 1 size, 1 quality. One of the most popular market apples in cultivation; very handsome and prolific. August and September.

Lord Grosvenor (*New*), 1 size, 1 quality. A large showy apple; skin transparent and handsome. September to January.

Lord Derby, 1 size, 1 quality. A large, handsome, and good apple. October to January.

Lord Raglan, 2 size, 1 quality. An excellent keeping apple, first-rate for culinary purposes. January to June.

Leadington (*Grey*), 2 size, 1 quality. A very hardy prolific sort for northern counties. September to December.

Melrose, 1 size, 1 quality. An old Scotch variety of great excellence. October to January.

Mère de Ménage, 1 size, 1 quality. A very fine culinary apple. October to March.

Mitchelson's Seedling, 1 size, 1 quality. A desirable sort, suitable either for dessert or cooking. December to February.

Norfolk Bearer, 1 size, 1 quality; hardy, and an excellent apple in all ways. November to January.

Nelson's Glory, 1 size, 1 quality. A large heavy apple, excellent for sauce. October to January.

Prince Albert, 1 size, 1 quality. A very prolific apple, resembling Cellini, but later. September to December.

Peck's Pleasant, 1 size, 1 quality. A first-rate American sort, useful for dessert or culinary use; largely grown for market. November to March.

Pippin (*Bridgewater*), 1 size, 1 quality. A prolific sort, useful for dwarfs. October to April.

Pippin (*Broad-eyed*), 1 size, 1 quality. An old and very excellent kitchen apple. January to March.

Pippin (*Colonel Harbard's*), 1 size, 1 quality. An excellent culinary apple, of Norfolk origin. November to March.

Pippin (*Galloway*), 1 size, 1 quality. A hardy and prolific sort for culinary purposes. October to January.

Pippin (*Kentish*), 2 size, 1 quality. A very old and useful orchard variety. October to December.

Pippin (*Lemon*), 2 size, 1 quality. An excellent old variety, fit for dessert. October to March.

Pippin (*London*), or *Five-crown Pippin*, 2 size, 1 quality. An excellent sound-keeping apple; useful for dessert. November to May.

Pippin (*Wadhurst*), 2 size, 1 quality. A fine apple either for culinary or market purposes. October to February.

Pippin (*Sturmer*), 2 size, 1 quality. One of the best of keeping apples, useful either for kitchen or dessert. February to June.

Professor, 1 size, 1 quality. A very fine apple, of excellent quality, hardy, and prolific. September to January.

Queen Caroline, 1 size, 1 quality. Compact grower, and very beautiful apple; much grown in Kent, valuable for small gardens. October to December.

Rambour Franc, 1 size, 1 quality. A vigorous grower and prolific, of French origin. September to October.

Rambour d'Hiver, 1 size, 1 quality. Tree vigorous, prolific, a useful kind. November to December.

Reinette du Canada, 1 size, 1 quality. One of the finest apples in cultivation, good either for culinary, dessert, exhibition, or market. November to April.

Russet (*Royal*) or *Keeping Russet*, 1 size, 1 quality. One of the best Russets; a good grower and cropper, and very desirable sort. November to May.

Russet (*Pile's*), 2 size, 1 quality. An excellent grower and cropper. October to March.

Rymer 1 size, 1 quality. One of the very best of late sorts; a beautiful apple. December to April.

Stone's Apple, or *Loddington Seedling*, 1 size, 1 quality. A grand market apple, first brought into notice in the parish of Loddington, in Kent; does best grafted on strong sour kind, never known to fail; extra good either for cooking or exhibition. August to December.

Sterling Castle, 1 size, 1 quality. An extraordinarily prolific sort, in great favour in cold localities, good as a dwarf. October to November.

Tower of Glamis, 1 size, 1 quality. Tree healthy, very free grower, and prolific; one of the best of apples for orchards; of Scotch origin. November to March.

The Queen (*Saltmarsh*), 1 size, 1 quality. A large handsome apple, either for kitchen or exhibition. November.

Tibbet's Incomparable, 1 size, 1 quality. A remarkable handsome and good apple. November to January.

Waltham Abbey Seedling, 1 size, 1 quality. An Essex apple of great excellence. September to December.

Washington, 1 size, 1 quality. A very handsome apple, covered with a peach-like bloom. September.

Winter Queening, or *Sussex Duck's-bill*, 1 size, 1 quality. A very excellent keeping apple, fit either

for culinary purposes or for dessert; largely grown in Kent for market. December to February.

Selections from the above for small orchards.—Alfriston, Annie Elizabeth, Beauty of Kent, Beauty of Hants, Blenheim Orange, Besspool, Bedfordshire Foundling, Beefing (Norfolk), Beefing (Striped), Bough (large yellow), Cox's Pomona, Cobbett's Fall Pippin, Codlin (Keswick), Codlin (Winter), Crab (French), Deux Ans (Hambledon), Dumelow's Seedling or Wellington's Dutch Mignonne, Echlinville Seedling, Flower of Kent, Fillbasket (Kentish), Golden Noble, Gooseberry Pippin, Gravenstein, Greening (Northern), Goff (Orange), Harvey, or Dr. Harvey, Harvey's Wiltshire Defiance, Hoary Morning, Hollandbury, Incomparable (Lewis's), King (Warner's), Reinette du Canada, Royal Russet, Stone's or Loddington Seedling, Tower of Glamis, Waltham Abbey Seedling, Winter Queening. The following make good standards, and they are also very prolific as dwarfs: Admirable (Small's), Alexander (Emperor), Atkins' Seedling, Codlin (Manks), Burr Knott, Betty Geeson, Codlin (Carlisle), Duchess of Oldenburgh, Forge Apple, Frogmore Prolific, Golden Spire, Hawthornden (Old and New), Jolly Beggar, Lord Suffield, Queen Caroline, Early Julien, Hanwell Souring, Sturmer Pippin, Rymer, Cellini, Stirling Castle, Belle Dubois, Codlin (Dutch or London).

Selection for Dwarfs, cordons, or pot trees.—In addition to sorts previously described there are several possessing great excellence if grown in the

form of cordons or on walls in sheltered gardens; and wherever collections of apples are grown they are well worth a place. Many of the very best culinary sorts are also very beautiful for dessert, being clear and almost transparent in the skin, and some such beautiful kinds as Emperor Alexander, Belle Dubois, and Reinette du Canada are amongst the most effective for exhibition purposes.

American Beauty, 1 size, 1 quality, yellow and red, tender and juicy. A very desirable apple, and very prolific. December to April.

Banks' Exhibition, 1 size, 1 quality, pale yellow, mottled crimson. A very beautiful apple for culinary use or for exhibition. September to December.

Beauty of the West, 1 size, 1 quality, greenish-yellow and red. A tender, juicy American apple of great excellence. October to February.

Beauty of Hants, *Beauty of Kent*, *Belle Dubois*, *Bedfordshire Seedling*. All previously described.

Belle et Bonne, 1 size, 1 quality, pale yellow faintly streaked with red. A highly flavoured excellent old apple. October to December.

Bellefleur (*Brabant*), 1 size, 1 quality, beautiful lemon coloured, useful for kitchen or dessert, and very effective for exhibition. October to March.

Bellflower (*Yellow*), 1 size, 1 quality. A beautiful French apple on warm soils, excellent in quality. November to February.

Calville (*Aromatic*), 1 size, 1 quality, reddish yellow. A handsome early apple, very juicy and richly perfumed. September to October.

Calville Blanche d'Été (*White Calville*), 2 size, 1 quality. Skin, pale yellow, very handsome when full grown. Flesh, white, tender, and delicate; the earliest of the Calvilles. August and September.

Calville Blanche d'Hiver, 1 size, 1 quality. Skin, greenish yellow, golden when ripe; excellent for kitchen or for dessert. January to April.

Duchesse de Brabant, 1 size, 1 quality. Golden yellow and red. A handsome, valuable apple. October to March.

Early Harvest, 1 size, 1 quality. A very fine early American apple; good for table or kitchen. July and September.

Echlinville Seedling, *Emperor Alexander*, *Flower of Kent*, and *Golden Noble*. Described already.

Hawthornden (*Seacliffe*), 1 size, 1 quality. A very large handsome apple, suited for dwarfs or cordons.

Incomparable (*Moss's*), 1 size, 1 quality. Skin, yellow, streaked with red. A handsome and excellent apple for culinary purposes. January to May.

Incomparable (*Toker's*), 1 size, 1 quality. Greenish yellow tinged with red, firm, crisp, and juicy. A very desirable sort, excellent for kitchen. October to January.

Jacques Lebel, 1 size, 1 quality. Beautiful pale yellow and red; a very handsome apple of French origin, excellent for any purpose. October to January.

Nonsuch (*Hubbardston's*), 1 size, 1 quality. American apple, useful for culinary or dessert purposes. October to January.

Nonsuch (*Peasgood's*), 1 size, 1 quality. A new variety, of great merit for table or kitchen. September to November.

Northern Spy, 1 size, 1 quality. Pale yellow, streaked with red; one of the finest apples in cultivation; repays attention for kitchen or table. October to June.

Pearmain (*Adams'*), 1 size, 1 quality, pale yellow, tinged with red; good for any purpose. December to February.

Pearmain (*Balchin's*), 1 size, 1 quality. A very beautiful apple raised at Dorking; good for any purpose.

Pearmain (*Baxter's*), 1 size, 1 quality. A certain cropper, excellent for kitchen or dessert. November to March.

Pearmain (*Royal*), 1 size, 1 quality. A fine old variety for culinary or dessert use. October to March.

Pomona (*Cox's*). Ought to be in every collection.

Reinette du Canada. One of the very best.

Reinette du Caux, 1 size, 1 quality. Flesh, greenish yellow, excellent for cooking. October to December.

Reinette Grise, 2 size, 1 quality. Good culinary sort in warm soils and situations. November to May.

Stone's, or *Loddington Seedling.* Extra fine, ought to be in every garden, large or small.

Warner's King and *Tower of Glamis.* To these the same remark applies.

Most of the above kinds are brought to great excellence in the neighbourhood of Maidstone as cordons, but in colder counties it would be best to rely on the varieties enumerated as being suited for orchard trees, or such as the three last named in this list.

Dessert Varieties.—In giving a list of varieties suitable for dessert and orchard culture, one has to deal with a numerous class of apples of nearly equal merit, for although in kitchen varieties size is a great consideration, it is rather a drawback than otherwise in dessert apples. A good, even sample of what is generally classed a second size is the most desirable for dessert purposes, and in this class quality is the great desideratum. Appearance, too, goes a long way on the dessert table, and of late years some handsome varieties, such as Worcester Pearmain, have become popular as market fruits, in which high colour is one of the first considerations. Even this, however, cannot be placed before quality. It is to their excellence in this respect alone that Ribston Pippin, Margil, and many of the oldest favourites still retain their hold on fruit-growers, for they are eclipsed as regards appearance by many later introductions. Amongst kinds specially suited for dwarf-trained trees there are several varieties of exceptional merit that can only be brought to perfection in Kent as cordons in sheltered positions, or as pot trees in orchard-houses. They are, however, extremely handsome when well grown, and make beautiful dessert fruit for winter use.

Select Dessert Apples for Standards.

Ashmead's Kernel
Astrachan (red)
Beachamwell
Benoni
Court Pendu Plat
Court of Wick
Crofton (Scarlet)
Cole's Seedling
Colonel Vaughan
Devonshire Quarrendon
Golden Harvey
Gascoyne Scarlet
Golden Knob
Hall Door
Incomparable (Barton's)
Juneating (red)
(white)
Mr. Gladstone
Nanny
Nonpareil (old)
Nonpareil (scarlet)
Oslin
Pearmain Barcelona)
(Claygate)
(Worcester)
Pippin (Baddow)
(Cockle)
(Farleigh)
(Golden)
(Franklin's)
(Guernsey)
(Kerry)
(marbled)
(Ribston)
(Sturmer)
Russet (Aromatic)
(Rosemary)
(Syke House)
(Wheeler's)
Sam Young

Dessert Apples suitable for Dwarfs.

Astrachan (white)
Coe's Golden Drop
Ingestrie (red)
(yellow)
Irish Peach
Margil
Maclean's Favourite
Nonpareil (Braddick's)
(Pitmaston)
Nonsuch (Peasgood's)
(Welford Park)
Northern Spy
Ord's Apple
Pearmain (Hubbard's)
Pearmain (Mannington)
(winter)
Pippin (Fearn's)
(golden suummer)
(Keddlestone)
(King of the)
(Orange, Cox's)
Reinette (Baumann's)
de Bordeaux
de Champagne
Russet (Boston)
(golden)
(Powell's)

Dessert Apples for cordons, bushes, or orchard

house trees.—In the following list will be found many kinds already enumerated, but though they succeed as orchard trees about Maidstone, they become greatly improved when afforded the shelter of a walled-in garden. Sorts marked * require, even about Maidstone, the shelter of a wall or orchard house in order to have them of the best quality. Many sorts, too, that succeed in Kent as cordons or bushes on the Paradise stock, require in northern counties a wall or glass roof to do them full justice. An idea prevails that the apple, being closely related to our hardy Crab, needs no protection, and in many gardens all the best positions are assigned to peaches, apricots, or plums; but if any one wants evidence that the apple is capable of repaying extra attention, let them visit Barham Court, or some garden in which it is made a speciality, and see for themselves. At Barham Court apples occupy the most sheltered borders with a south aspect, or are, when in pots, furnished with a glass roof. In fact, some few varieties of very great merit, such as Cornish Gilliflower, will only develop their exquisite flavour under such modes of culture; and where such cannot be accorded them, it is better to trust to hardier sorts. Some fruit cultivators, however, in this district make a good profit by growing sorts like the Ribston, Margil, and Cox's Orange Pippin, for market as dwarf bushes, the fruit on which is thinned out and grown as if for exhibition. Thus treated, they realize high prices even in years when apples are abundant.

Kinds for Cordons, Bushes, or Orchard Houses.

Ashmead's Kernel
Aromatic (Cornish)
* American Mother
Astrachan (white)
(red)
* Borsdorffer
* Cornish Gilliflower
* Calville Blanc
Court Pendu Plat
Court of Wick
Coe's Golden Drop
Devonshire Quarrenden
Early Strawberry
* Esopus Spitzenberg
* Fenouillet Gris
* Jaune
* Rouge
Golden Harvey
Incomparable (Barton's)
Ingestrie (red)
(yellow)
Juneating (red)
Lord Burghley
Margil
Mr. Gladstone
* Mela Carla
* Melon
Nonpareil (early)
(Pitmaston)
(scarlet)
(Lodgmcre)
Nonsuch (Peasgood's)
Northern Spy
Ord Apple
Peach (Irish)
Pearmain (winter)
(Balchin's)
(scarlet)
(golden)
(Worcester)
(Baumann's red)
Pippin (Cox's Orange)
(Cockle)
(Fearn's)
(golden, Franklin's)
(Isle of Wight)
(Keddlestone)
(King of the)
* (Newtown)
(Ribston)
(Sturmer)
* Pomme d'Aunée
* de Neige
Reinette Baumann
de Bordeaux
* Franche
* Grise
* d'Automne
(golden)
Russet (Cox's Redleaf)
(golden)
(Rosemary)
(Syke House)
(Wheeler's)
* Spitzenberg (Newtown)
* Swaar.

Diseases.—Good cultivation, such as a thorough preparation of the soil before planting, careful pruning, guarding the stems from injury, and rich top

dressings to keep the roots near the surface, are the surest ways of keeping trees healthy. On the elevated portions of the hills about Maidstone, where the soil is light and dry, only a limited number of sorts keep long healthy in the natural soil, many of the tender kinds that do well on the lower parts of the slopes failing through canker or mildew in a few years. Drought during the growing season has probably much to do in inducing mildew, and unskilful pruning canker. Only sorts that keep healthy under such conditions should therefore be planted; and, singular as it may appear, some of our choicest varieties do adapt themselves to these unfavourable positions, and keep as healthy as a Crab or an ungrafted seedling. Stone's Apple or Loddington Seedling, one of the best of market kitchen apples, keeps healthy on soils where many others fail; and that most beautiful of early dessert apples, the Summer Golden Pippin, not only keeps healthy, but bears annually good crops. Most of the Codlin tribe, too, keep equally free from canker or mildew, even where it is difficult to keep Ribstons, Cox's Orange, or King of the Pippins alive. It does not pay market-growers to try remedial measures, for even when the trees are but slightly affected by either canker or mildew the fruit is sure to be specked, or comparatively valueless for market. If the main branches are healthy, they are headed down and grafted with sorts proved to succeed in the particular locality; and the most efficient remedy for keeping the trees in health is a top-dressing of par

tially rotten manure, spread over the surface after the winter pruning has been done, to keep the roots cool and moist and near the surface. It is when the roots get down into bad subsoils that the trees rapidly canker. Pruning off the unripened ends of the wood, so that the main shoots or leaders start from thoroughly ripened wood, is also of great benefit, for unripe wood is liable to get injured by frosts, which rupture the sap vessels, and if left on the tree cause wounds similar to those produced by canker.

Mildew when it makes its appearance on the leaves must be treated superficially with sulphur, the best means of applying it being by one of the sulphurators used for hops. They do the work well, distributing it evenly over the surface, but to be effectual it must be renewed at intervals. If put on while the leaves are damp with dew it sticks to them, and has the effect of killing the fungus. It is best applied when the weather is clear and bright, or when hot days and cool, dewy nights prevail. Prevention is, however, better than cure, and the means employed to ward off canker will generally keep off mildew.

Moss and Lichen.—These usually occur on trees that grow on wet undrained ground. They are seldom troublesome where the land is well prepared or naturally well drained, for although the apple oftener suffers from lack of, rather than from excess of, moisture, anything in the way of stagnant water in the soil soon shows itself in the shape of

moss-grown branches. Efficient drainage is the only permanent remedy, but as a superficial measure the stems and main branches should be scraped in winter and coated with lime-wash. The branches must also be dusted with freshly slaked lime; and as moss always spreads most rapidly on trees in a stunted condition, they should get a good dressing of rich manure, either solid or liquid, to start them into vigorous growth.

Dessert Apples.—1. *Aromatic* (*Cornish*), 2 size, 1 quality. October to January. A very beautiful late-keeping dessert apple.

2. *Ashmead's Kernel*, 3 size, 1 quality. November to May. A very excellent small table apple; keeps well, and is hardy, and a great cropper.

3. *Astrachan* (*Red*), 2 size, 2 quality. August and September. A very beautiful looking early apple; in great demand in market, for its brilliant crimson skin.

4. *Astrachan* (*White*), 2 size, 1 quality. August and September. A lovely apple, with transparent flesh. Requires warm soil and situation to bring to high perfection.

5. *Beachamwell*, 3 size, 1 quality. November to March. A high-flavoured excellent sort, of Norfolk origin.

6. *Belmont*, 2 size, 1 quality. November to February. A very handsome apple, skin yellow, streaked red; very good.

7. *Benoni*, 2 size, 1 quality. August to September. Pale yellow, marked crimson; a hardy and excellent sort.

8. *Brickley Seedling*, 3 size, 1 quality. January to April. Yellow, striped with red; a hardy, high-flavoured apple.

9. *Cobham*, 1 size, 1 quality. September to January. Yellow and red; a fine handsome apple, with Ribston flavour.

10. *Colonel Vaughan's*, 3 size, 1 quality. September and October. Crimson skin, shaded with yellow; a very handsome and prolific variety. Largely grown around Maidstone for London market. In addition to its usual name of Colonel Vaughan, its free bearing properties have procured for it the name of *Prolific*, and in market its name is abbreviated to *Kernels*.

11. *Court Pendu Plat*, 2 size, 1 quality. January to March. Greenish yellow and red; an excellent sort for either market or private gardens; it is a regular and abundant cropper, and the latest flowering sort known, and for this reason it is commonly called the Wise apple. It is one of the few sorts that does well anywhere.

12. *Court of Wick*, 3 size, 1 quality. October to March. Yellow, tinted red; a valuable dessert sort for orchard culture, being prolific, hardy, and of excellent quality.

13. *Court of Wick* (*Morriss's*), 3 size, 1 quality. November to March. Pale green, shaded red, slightly russeted. A seedling from the old Court of Wick. An excellent variety.

14. *Crofton Scarlet*, 2 size, 1 quality. October to December. Bright red, russety. A delicious apple

of Irish origin, hardy and prolific; good market sort.

15. *Coe's Golden Drop*, 3 size, 1 quality. November to May. A beautiful small golden apple; excellent, *prolific.*

16. *Cole's Seedling*, 2 size, 1 quality. October to May. Yellow, mottled crimson; richly flavoured Late variety.

17. *Copeman's*, 1 size, 1 quality. January to June. A very fine dessert apple; good quality, good keeper.

18. *Cumberland Favourite*, a large conical apple of great merit, useful for any purpose.

19. *Devonshire Quarrenden*, or Red Quarrenden, 2 size, 1 quality. August and September. A brilliant coloured and excellent apple for either market or private gardens. One of the best and most reliable of sorts.

20. *Duke of Devonshire*, 2 size, 1 quality. January to May. Yellow, tinged red; very handsome and good.

21. *Downton*, or Knight's Golden Pippin, 3 size, 1 quality. November to January. A large Golden Pippin, excellent.

22. *Early Harvest*, 2 size, 1 quality. August. A good early dessert apple; fine crisp flesh.

23. *Early Strawberry*, 2 size, 1 quality. August and September. A handsome early apple of good flavour.

24. *Gascoyne's Scarlet Seedling*, 2 size, 1 quality. October and November. A very beautiful red-cheeked apple, prolific and hardy. Very popular in market orchards.

25. *Golden Knot*, 3 size, 2 quality. December to March. A beautifully russeted apple, one of the hardiest, most prolific sort for market. Golden Knot, or Russet, is very prolific, and good keeper; fetches high price late in the season, but is tough fleshed.

26. *Golden Harvey*, 3 size, 1 quality. December to May. A beautiful fruit, one of the very best.

27. *Hall Door*, 2 size, 1 quality. November to March. A good keeping excellent sort. Make fine trees.

28. *Hicks' Fancy*, 3 size, 1 quality. October to December. A brisk-flavoured, nice dessert fruit, prolific.

29. *Irish Peach*, 3 size, 1 quality. August. A very beautiful early apple, best gathered and eaten from the tree, soft texture of flesh. In good seasons the Irish Peach is fit for dessert the end of July; fruitful in quite a young state, especially on Paradise stocks.

30. *Ingestrie* (*Red*), 3 size, 1 quality. October and November. A very beautiful and highly flavoured apple.

31. *Ingestrie* (*Yellow*), 3 size, 1 quality. September and October. A beautiful small golden-yellow apple. One of the most prolific and constant croppers; and it does well on light soils, where others fail.

32. *Incomparable* (*Barton's*), 3 size, 1 quality. November to February. Yellowish russet; a very delicious fruit.

33. *Juneating* (*Red*), 3 size, 1 quality. July and

August. A very beautiful apple, one of the earliest and oldest of dessert sorts.

34. *Juneating* (*White*), 3 size, 1 quality. July and August. The exact counterpart of the preceding sort, being very early, and a desirable sort for early crop.

35. *Lord Burghley*, 2 size, 1 quality. January to June. Yellow and crimson; a very excellent apple for late keeping; one of the best in quality.

36. *Margil*, 3 size, 1 quality. October to February. One of the highest flavoured apples grown; a rival to the Ribston, slow grower, but good cropper.

37. *Mr. Gladstone*, 2 size, 1 quality. July and August. Mottled red and yellow, bloom like a plum; good flavour, and very prolific. One of the most striking of new apples, and one that will be largely grown for early market work.

38. *Maclean's Favourite*, 2 size, 1 quality. October to January. Yellow, tree healthy, and prolific, but does best in light warm soils.

39. *Nanny*, 2 size, 1 quality. September and October. Greenish yellow, streaked crimson; a very beautiful and good early dessert apple.

40. *Nonpareil* (*Old*), 2 size, 1 quality. January to May. Greenish yellow and pale russet; one of the very best old kinds, both for flavour and excellence.

41. *Nonpareil* (*Braddick's*), 2 size, 1 quality. December to March. Slender grower, but excellent quality.

42. *Nonpareil* (*Pitmaston*), 2 size, 1 quality. No-

vember and December. Skin dull green, russeted; first-rate dessert fruit.

43. *Nonpareil* (*Scarlet*), 2 size, 1 quality. January to March. Greenish russet, streaked red. A very prolific good variety, but rather a slender grower, like most of the Nonpareils.

44. *Nonsuch* (*Peasgood's*), 1 size, 1 quality. September and November. A new sort of great merit, available for kitchen or table use, and a great favourite with market growers.

45. *Nonsuch* (*Melford Park*), 2 size, 1 quality. October and November. A new variety of first-rate quality.

46. *Northern Spy*, 1 size, 1 quality. December to May. One of the handsomest and most excellent apples in cultivation. It is rather shy bearer; best on dwarfing stocks.

47. *Ord's Apple*, 2 size, 1 quality. November to May. A very handsome and excellent fruit for general use.

48. *Oslin*, 2 size, 1 quality. August and September. Yellow; of a peculiarly rich aroma; one of the best.

49. *Pearmain* (*Barcelona*), 2 size, 1 quality. November to March. An old variety of great excellence, good for either kitchen or dessert. Makes large flat-headed trees.

50. *Pearmain* (*Claygate*), 2 size, 1 quality. November to March. A richly-flavoured fruit. Tree hardy and prolific.

51. *Pearmain* (*Golden Winter*), 2 size, 1 quality.

October to January. Golden yellow, streaked crimson; a very beautiful apple for any purpose. Tree strong, healthy, and very prolific.

52. *Pearmain* (*Hubbard's*), 3 size, 1 quality. November to April. Skin greenish yellow, marked red. Hardy and prolific.

53. *Pearmain* (*Mannington*), 2 size, 1 quality. November to March. A very prolific and excellent kind for any purpose.

54. *Pearmain* (*Lamb Abbey*), 3rd size, 1 quality. November to April. A valuable late keeper. Raised and much grown in Kent.

55. *Pearmain* (*Red, Winter*), 2 size, 1 quality, January to March. Tree of upright growth, fruit shaded maroon, of good quality, and an excellent cropper.

56. *Pearmain* (*Scarlet*), 2 size, 2 quality. September and October. Yellowish skin, crimson russeted, very handsome.

57. *Pearmain* (*Worcester*), 2 size, 1 quality. August and September. A very handsome apple, brilliant crimson. A new variety, likely to be a great market favourite. This kind will probably supersede many of the older kinds for market, being very handsome and prolific in a young state.

58. *Pearmain* (*Winter*), 1 size, 1 quality. December to May. One of the oldest and best of the Pearmains, and therefore adapted for any purpose.

59. *Pearson's Plate*, 3 size, 1 quality. October to March. Greenish yellow, streaked red; very good.

60. *Pennington Seedling*, 2 size, 1 quality. Oc-

tober to March, yellowish, russeted; a desirable sort.

61. *Pine Apple* (*Pitmaston*), 3 size, 1 quality. October to January. A beautiful pine flavour.

62. *Pippin* (*Baddow*), 2 size, 1 quality. October to May. Yellowish green and red, with Ribston flavour.

63. *Pippin* (*Cambusnethan*), 2 size, 1 quality. October to February. Yellow and red. Free, hardy, and prolific, well suited for northern districts.

64. *Pippin* (*Cockle*), 2 size, 1 quality. November to May. A conical yellow speckled fruit of great excellence, one of the oldest and best for any purpose.

65. *Pippin* (*Downton*), 3 size, 1 quality. October to February. A lemon yellow fruit, excellent for dwarfs.

66. *Pippin* (*Farleigh*), 2 size, 1 quality. November to April. A very hardy handsome apple; a great favourite in this part of Kent, where it originated.

67. *Pippin* (*Fearn's*), 2 size, 1 quality. October to March. Greenish yellow, shaded crimson; a very distinct handsome apple, one of the best of all the Pippins, a market favourite.

68. *Pippin* (*Golden*), 3 size, 1 quality. October to April. A beautiful golden apple, one of the oldest and best of all, extra fine.

69. *Pippin* (*Golden, Franklin's*), 2 size, 1 quality. October to December. Skin yellow, spotted, a very beautiful little apple. Very prolific.

70. *Pippin* (*Golden, Hughes'*), 3 size, 1 quality.

December to March. Greenish yellow with russety dots. Very prolific.

71. *Pippin* (*Golden Summer*), 3 size, 1 quality. August to September. Skin smooth, pale yellow, tinged with orange on sunny side; a beautiful early sort.

72. *Pippin* (*Gooseberry*), 3 size, 1 quality. October to February. Pale yellow; good keeper.

73. *Pippin* (*Guernsey*), 3 size, 1 quality. December to March. Resembles Golden Knob, better flavour. Prolific.

74. *Pippin* (*Kerry*), 3 size, 1 quality. September to November. Yellow, streaked with red; a beautiful early dessert kind, one of the best and most prolific.

75. *Pippin* (*Keddlestone*), 3 size, 1 quality. November to March. Pale yellow, russeted, very good.

76. *Pippin* (*King*), 2 size, 1 quality. October to January. A handsome apple suitable for any purpose. Tree healthy and prolific. It is one of the best sorts in cultivation for market or private use.

77. *Pippin* (*Marbled*), 2 size, 1 quality. October to December. A very hardy useful kind, suitable for cold localities.

78. *Pippin* (*Orange, Cox's*), 2 size, 1 quality. October to April. Skin greenish yellow, bright red on sunny side. Slender wood, but very beautiful fruit, repays good cultivation; one of the very best for dwarfs or trained trees.

79. *Pippin* (*Osterley*), 3 size, 1 quality. October to February. A very excellent apple, with the flavour of a Ribston.

99. *Russet* (*Rosemary*), 2 size, 1 quality. October to February. Yellowish green, shaded red and russet; a very beautiful variety, and very prolific.

100. *Russet* (*Redleaf*, *Cox's*), 2 size, 1 quality. December to February. An excellent variety, something in the way of Golden Knob. A Kentish sort.

101. *Russet* (*Syke House*), 2 size, 1 quality. October to March. A very excellent, well-known sort; one of the best flavoured late apples in cultivation.

102. *Russet*(*Wheeler's*), 2 size, 1 quality. November to April. Moderate grower, excellent quality.

103. *Sam Young*, 3 size, 1 quality. November to February. An excellent little apple.

Insects.—The worst insect enemy to the attacks of which the apple is liable is what is termed the American blight, a cottony looking substance, which occupies every crevice of the bark, and when once fairly established difficult to eradicate. Perseverance in scrubbing the stems with hard brushes will, however, check its progress, and soap-suds applied with force by a powerful garden engine will extirpate it. I have also found Gishurst Compound to be effectual in destroying this pest. When the trees are dormant, it may be applied strong enough to kill any kind of insect, say 8 oz. to the gallon, without injury to the tree. As this blight goes under ground, and attacks the roots as well as the tops, it will be advisable, in extreme cases, to uncover the latter as far as they seem affected, and remove the soil entirely to some open field. After a thorough cleansing substitute fresh soil, which will have the

effect of giving the trees a fresh start. Paraffin oil is one of the cheapest and most effective insecticides we have, and if the stems and affected branches are washed with a strong mixture of this and water, but little blight will be seen the following year.

Green and black fly are sometimes troublesome in the case of young trees, especially in nurseries, where in whole quarters the leaves may be seen coated on the under-sides with fly, and if not destroyed they greatly check growth. Dipping the affected parts in tobacco water, Gishurst Compound, and other liquids, or deluging them with these by means of the garden engine, are the remedies usually employed. Dusting the leaves, when damp, with snuff or tobacco powder will also greatly check their progress, as will likewise keeping the surface soil stirred, and as much as possible promoting vigorous growth.

Mussel scale sometimes gets established on the bark. When that happens, brushing with a very hard brush will greatly reduce its numbers; and painting the stems with clay, soft soap, and a strong dose of paraffin or Gishurst Compound will, by following it up for two or three seasons, quite clear the tree, and the wood will assume a healthy, shining appearance, a certain precursor of health and fertility. This is one of the diseases that denote poverty of soil; and good cultivation will cure it quicker than anything else.

Caterpillars and Weevils.—These are usually worse in orchards in which the ground is dug than

in those carpeted with grass. The immediate destruction of grub-eaten apples that fall on the ground is doubtless one means of reducing some kinds; and in all cases where the trees are much affected it will be well to break the surface soil up well in frosty weather; birds will then search diligently for them in the freshly-broken soil. In the growing season only hand-picking is of much avail, and that is a tedious operation. Scraping and cleaning the stems and painting them with various insecticides, although only aimed at the destruction of one of these pests, will indirectly help to free them from all of them. A somewhat primitive mode of clearing the trees of these pests and manuring them at the same time is practised here—viz., folding pigs under them in pens made of iron hurdles, that are moved every few days. The pigs, having no rings in their noses, turn up the soil in quantities equal to ploughing. Pigs will also clear the land of all kinds of roots, such as those of docks and other noxious weeds, and the crops of clean fruit borne on trees thus treated is the best argument in favour of its efficiency.

Renovating Neglected Trees.—There can be no question that many of the ills that befall our apple trees, and which cause them to fail in producing regular and abundant crops, are clearly traceable to neglect. Although a great revival has taken place in hardy fruit culture within the last few years, it is by no means uncommon to find trees in all parts of the kingdom that never get the slighest attention from the time of gathering one crop until

the next is ready. All is left to chance. If the soil is good and naturally well drained, they may bear fairly well for some years; and if they fail, there is always the ready excuse—viz., our wretched seasons. Nevertheless, it may happen that the next neighbour has good crops and few failures; but in this case the trees have been carefully tended from the first day they came from the nursery. The apple is not so transient that even the longest lived among us need replant orchards more than once in a lifetime; and if the directions laid down in previous papers with regard to the forming of new orchards or fruit gardens are followed, there need be little fear that the result will be unsatisfactory. It is in the case of trees that, as regards age, ought to be in their prime, but which from neglect are prematurely old and apparently worn out, that disease and insects are most troublesome.

Where orchards are under-cropped with bush fruits, the trees are more quickly brought into a debilitated condition than in any other way, owing to the close system of planting adopted; and unless heavy dressings of good manure are applied every year, the bushes soon take all the nutriment out of the surface soil, and the trees are driven to send their roots more deeply into the ground than is good for them, inducing sappy, unripened shoots, that easily fall victims to canker. It is the little wiry top roots that feed the fruitful spray that we want to encourage and keep at work near the surface. A few years ago an orchard crowded with bushes and

rubbish growing right into and choking the lower branches of the apples came under my charge. The first thing to be done was to grub all the bush fruits up by the root, and burn them in the open spaces along with couch-grass and weeds. The centres of the trees were also cleared of dead wood and weakly growths, and all erect growing shoots were shortened; the stems were cleared of moss, and the branches dusted with lime-wash. Several of the oldest trees, too, were cut out entirely to let in air to those left, the greatest bane of orchards being too thick planting. The soil was levelled and left quite loose, the first season keeping it hoed and raked, so as to get it thoroughly clean. Next winter the trees were looked over, and where the shoots were strong they were shortened. Trees not of approved sorts were cut back for grafting, which was done on the small wood, about 100 grafts being put on a fair-sized tree. In this way a good head was quickly the result. A good dressing of manure was then spread around each tree and lightly forked in, and in the spring following the ground was sown with grass seeds. This orchard has been very little trouble since then, and it has produced heavy crops ever since it has been renewed. Trees in good bearing order require but little pruning—only just a look over annually to keep the centres clear, and to top erect growing shoots. Trees that have been regrafted need thinning out and treating exactly as recommended in the case of young trees; they usually form flower-buds very abundantly, and are

very prolific after the third year from regrafting. Feeding the grass under them close off with sheep, and bringing in all kinds of garden green crops to augment their supply of food, help the trees very much. We also use road scrapings, old potting mould, or any kind of mixed manures, casting them on in winter and spreading them on the surface. I have no hesitation in saying that the more manure we apply the finer and heavier are our crops, and the less are we troubled with diseases and insects. They are unable to successfully attack trees in vigorous health.

Orchards on Grass.—These are much more favourably circumstanced than under-cropped orchards, owing to the trees having the soil to themselves; but if the grass is cut and carried away it is questionable how long they will remain healthy and fruitful—*i.e.*, if manure be not pretty freely applied to replace the removed grass. The same measures as to pruning and cleaning of stems and branches as in other cases must be adopted. The turf should be taken off as far back as the circumference of the branches, and the exhausted soil thrown out until the roots are reached, when a good coating of manure and fresh loam mixed together may be applied to them, the old soil being spread on the surface. This will soon produce a good effect, and when the trees are restored to vigour they should be maintained in a fruitful state by rich surface dressings that are easily applied, and especially by the cheapest and most profitable mode of dressing of all,

viz., close feeding off with sheep, particularly by making the orchard their winter as well as summer quarters, and bringing turnips and other roots, oil-cake, hay, &c., to supplement their food. The trees under such conditions find plenty of rich food close to the surface. I may mention that those who may still look upon manure as the forerunner of disease in fruit trees should see orchards about here that are dressed with night soil, sewage, &c., and note their healthy look and the exceptional crops they carry. The place to look for insect pests and other ailments to which apple trees are liable is where poverty of soil has predisposed the trees to their attacks.

Renovating Dwarf Trees.—Apples trained as dwarfs and kept closely cut or pinched in may be reinvigorated with the greatest certainty by lifting them carefully with all the fibres that can be got with them, and after cutting back the coarse roots to moderate limits, replanting either on entirely fresh ground or in holes filled with fresh soil. They should be treated thus as early in the month of October as possible, and as soon as replanted have a good coating of manure laid over the roots. The old hard spurs may be thinned out with a small pruning saw, and the remainder shortened in considerably. Trees on trellises that fail to produce fruit of first-rate quality will be greatly benefited by undergoing this process, and if on the Paradise stock, as all these dwarf trees should be, they will scarcely feel the check. Being surface rooters, they

are generally well furnished with fibres. After replanting, the leading shoots may be shortened about one-third, and the spurs thinned out, when the trees will rapidly recover their energy; but to keep them in good bearing condition they must have first-class treatment. Any one having a good collection of good dwarf apples in a favourable situation must make up his mind to keep the soil free from other crops, the same as a vine-border, and mulched and treated with equal care. Apples, whether in orchards or gardens, repay careful culture as well, or even better, than any other cultivated fruit.

Cooking, &c., Apples.—The apple is well known to be the best and most wholesome of fruits, and it is one that may with little difficulty be had at all seasons of the year, whilst the different uses to which it may be put are almost innumerable. That the consumption of apples is much larger now than in former years is proved by the immense increase in the quantities which arrive at our markets from America, and also by the extended culture of apples in many parts of England. The apple crop in England is, on the whole, a somewhat uncertain one, but by planting only those kinds which have proved fruitful even in the worst of seasons, this drawback may in time be overcome. Among the best kinds in cultivation for cooking, and which, moreover, are the best croppers, may be mentioned Warner's King, Tower of Glamis, Stone's Apple (a kind known chiefly in Kent), Lord Suffield, Keswick Codlin (early), Blenheim Orange, Stirling Castle, Haw-

thornden, Cox's Orange Pippin, and Sturmer Pippin. If only one apple tree can be planted, the last-named should be chosen. Mank's Codlin is a kind which also usually crops well, and is the best that can be obtained for making apple-jelly. Of American apples the best kind that comes to our market is the Newtown Pippin. It needs little or no sugar in cooking, whilst for dessert it is the best of all apples, but we may add that good samples are seldom obtainable. Good judges in America tell us that there are much more delicate and digestible apples there which do not come into our markets, such as the Jonathan, a small, red, delicious apple. A kind called the Baldwin is largely imported from America, and it is in every way an excellent cooking apple. Of dessert apples these are a few of the best, which come into use in the order named: Devonshire Quarrenden, Irish Peach, Kerry Pippin, Cox's Orange Pippin, Blenheim Orange, Winter Pearmain, Fearn's Pippin, Golden Pippin, and Golden Knob. Of English dessert apples, which are largely grown for market, are Juneatings, Nonpareils, and Golden Knobs, which latter keep good till apples come round again. Many kinds of apples which are excellent when boiled are f little use for baking, and *vice versâ*, but the kinds mentioned above as cooking apples will be found to be excellent either baked or boiled.

Apples for Food.—At present apples are principally used in the form of puddings, pies, tarts, and sauce, and are also eaten raw, in which state some very good fresh and tender eating apples are, for

some, more wholesome than when mingled with butter, eggs, and flour. But they are very delicious, and, for some persons, still more wholesome when simply baked. Good baked apples are a most desirable addition to a meal, and are far more wholesome than half the dishes usually esteemed essential at such times. Served with milk and bread, they make a good diet that young children can partake of. It will be found that less flour, eggs, sugar, and butter will be consumed in a family when a supply of good apples is in the store-room. There are dozens of receipts for preparing apples for the table, but almost all of them require the addition of butter, eggs, &c. All who desire that food should be health-giving as well as pleasant, would do well to encourage the simpler ways of cooking and eating them. Bear in mind that some kinds require, when baked or stewed, little or no sugar, as the Blenheim, Cox's Pippin, and a good Newtown Pippin.

Apple Snow Balls.—Wash 4 oz. whole rice, put it in a small stewpan with a pint of sweet milk, stir till it boils, and let it stand at the side of the fire to swell until quite soft, then turn it out on to a dish to cool. Have six apples all the same size, peel them, and take out the core carefully with an apple corer; mix up 2 oz. sugar, the grated rind of one lemon, a saltspoonful of powdered cinnamon; with this fill the holes of the apples where the cores were taken out. Have six small pieces of clean calico, butter each piece, cover each apple with the rice, dip your hands in flour and press the rice

on to the apples closely, tie them up tightly into the pieces of cotton. Have a good large saucepan filled with boiling water—must be quite boiling—plunge in your snow balls, and boil them quickly one hour. After they are cooked do not allow them to stand in the water, dish them up, dip them one by one in cold water for a second only, remove the cloths, and lay them on a napkin folded on to a hot dish. You can dish them on to a crystal dish, and pour a custard round them. This makes a nice sweet for children.

Apple Sauce.—Take six good-sized baking apples, peel them, and cut in four; take out the seeds, put the apples in a copper or enamelled saucepan, with about half a teacupful of water, put on the lid close, and let them stew until soft; then turn them out on to a sieve; press them through with a wooden spoon. Put them back into the saucepan with ½ oz. of butter (a half-ounce of butter is an ordinary teaspoonful not heaped up), 1 oz. of sugar, a few drops of lemon juice—the latter to be added according to the sharpness you may desire. Stir until quite hot, and serve at once in a sauce tureen. This apple sauce is always served with goose the same as with roasted pork. A simple way of cooking the apples after they are peeled and cored is to put them in a jar, put on the lid, and place it in a saucepan with water to reach halfway up the jar; put the lid on the saucepan, and steam them until soft, or you can place the jar in the oven and cook till soft. Proceed as above, mashing the apples

with a wooden spoon, instead of pressing through the sieve. The sauce can be made hours before it is required, but the butter and lemon juice must not be added until the sauce is wanted.

Apple Souffle.—Take what apples you require, say 1½ lb., peel and cut in four, take out the cores, put them on in a copper or enamelled saucepan, with 2 oz. of sugar and half a teacupful of water; put on the lid, and stew till soft, then pass all through a sieve. Separate the yolks from the whites of four eggs; beat up with a fork the yolks in a basin, with 2 oz. of ground loaf sugar, about ten minutes; boil half-a-pint of milk, and pour it over the yolks, gently stirring all the time. Butter a small basin, pour in the custard, and set the basin in a stewpan with a little boiling water—the water must not boil into the basin—cover it closely, and let it steam till it gets firm, in about half an hour. Half an hour before being wanted make the apples hot, dish them on the middle of your dish, flatten it a little with a spoon, and lay the custard over the apples; sprinkle a little ground cinnamon over them, about a quarter of a saltspoonful. While the apples are heating, beat up the whites of the eggs with a knife on a dinner plate to snow, and with a spoon lay the whites of the eggs on the custard in little heaps, so that it may have a rough-looking appearance, and heap it up high in the centre. Sprinkle about ½ oz. of pounded loaf sugar all over the top, and put it in a quick oven a few minutes to brown, a very pale brown. Serve it up hot.

Baked Apple Pudding (superior).—Take as

many apples as you think will make ½ lb. of pulp; peel, core, and put them in a stewpan with just enough water to keep them from burning; press through a sieve, and add to the pulp the grated rind of one lemon, 3 oz. of fresh butter, and ground white sugar to taste. Beat four eggs ten minutes, and mix all together. Put a border of puff paste round the dish, pour in the pudding, and bake about three-quarters of an hour. The paste should be of a delicate pale brown when it is done. Put a fold of paper over it until the pudding is quite cooked. It is best not to add the butter until the last; it should then be melted, and added to the other ingredients just before being poured into the dish, which must be put into the oven at once. Can be eaten hot or cold.

Apple and Tapioca Pudding.—One teacupful tapioca, six apples, juicy and well-flavoured Pippins, pared and cored, one quart water, one teaspoonful salt. Cover the tapioca with three cups of lukewarm water, and set it in a tolerably warm place to soak five or six hours, stirring now and then. Pack your apples in a deep dish, adding a cup of lukewarm water; cover closely, and steam in a moderate oven until soft all through, turning them as they cook at the bottom. If the dish is more than a third full of liquid, turn some of it out before you pour the soaked tapioca over all. Unless the apples are very sweet, fill the centre with sugar just before you cover with the tapioca. Bake, after the tapioca goes in, one hour.

Apple Ginger.—To 4 lb. of apples add 4 lb. of sugar, one quart of water, and 2 oz. best essence of ginger. First pare the fruit, cutting out every particle of core; then shape it to resemble the small kind of preserved ginger. Boil the sugar and water nearly twenty-five minutes until it is a nice syrup, then put in the apples; be sure not to stir them much; add the essence of ginger (if 2 oz. be not sufficient, add more). It will take nearly an hour to boil, until it becomes yellow and transparent. There will be some pieces that will not clear; put them by themselves, as they will spoil the look of the rest. It will require skimming. Newtown or Ribston Pippins are best.

Compote of Apple.—Pare medium-sized apples round and smooth, leaving the stems on. Scoop out the cores, put them close together in the stewpan, stems uppermost. Pour in sufficient water. Cover close to steam gently till the fruit is done through. Take them out carefully, and arrange them for serving. Boil down the syrup if too thin, or thicken it with a little arrowroot or potato flour; strain and pour it over the fruit, which should be basted with the syrup when sent to table, to give it a fresh glazed appearance.

Boiled Apple Dumplings. — Take some medium-sized apples, not too large, or they will not be nicely done, peel, but do not core them, as the pips enhance the flavour of the fruit; wrap each in a good beef-suet paste, made as for apple pudding; put them into boiling water, and let them

boil gently for an hour. Serve them as hot as possible, and always with ginger sauce.

Apple Miroton.—Scald six large apples, and, when soft enough to do so, pulp them, and, after sweetening a little, pile them upon the dish you purpose serving them in. Take a teacupful of the liquor in which they were dressed, and boil the finely-shred rind of a lemon and 3 oz. of white sugar; then beat well the yolks of three eggs and the white of one; add a dessert-spoonful of fine flour, the same of brandy, and 2 oz. of fresh butter. Mingle these ingredients well together in a saucepan over a moderate fire; when perfectly smooth, take them off and pour over the apples; then whisk the whites off the two eggs into a stiff froth, put it upon the miroton, sifting a little sugar over it. Place it for ten minutes in a slow oven, and serve hot or cold.

Apples in their Skins.—Wipe the apples perfectly clean, dipping them first into boiling water; then with a "corer" remove all the seeds and stem by punching it through the apple. Place the fruit in a deep baking dish, put a teaspoonful of white sugar into the middle of each apple, pour upon them a teacup of boiling water with three tablespoonfuls of sugar dissolved in it. Bake in a slow oven until quite soft, taking care not to burn the skins. The apples can also be pared, cored, and sweetened, and placed in a deep dish on the upper part of the stove, a large teacup of boiling water poured over them, and a plate laid over the dish. Boil them until soft, and there is no trouble about removing the skins

when eating them. For those who like such things free from sugar, cream, &c., and those who are forbidden the use of such substances, a really good cooking apple, stewed in the oven and mixed with plain boiled rice, forms a simple delicious dish which all the art and all the aids of the best cookery cannot surpass.

Apple Pudding.—Six good-sized apples, butter 3 oz., sugar 4 oz., eggs two, bread crumbs or biscuit grated 6 oz. Boil the apples as for sauce, stir in the butter and sugar, and when rather cool add the eggs, well beaten. Butter a pudding-dish cold, strew a layer of bread crumbs to the thickness of an inch at the bottom of the dish and as many as will adhere to the sides; pour in the mixture, strew crumbs over, and bake. When baked, turn the pudding out, and sift sugar over it. If the juice and grated rind of a lemon be added, a little more sugar will be required. The yolks of two more eggs may likewise be added. This pudding may also be boiled in a cloth.

Apple Pudding, Boiled.—Chop 4 oz. of beef suet very fine, or 2 oz. of butter, lard, or dripping —but the suet makes the best and lightest crust; put it on the paste-board, with 8 oz. of flour, and a saltspoonful of salt; mix it well together with your hands, and then put it all of a heap, and make a hole in the middle; break one egg in it, stir it well together with your finger, and by degrees infuse as much water as will make of it a stiff paste; roll it out two or three times with the rolling-pin, and then

roll it large enough to receive 13 oz. of apples. It will look neater if boiled in a basin, well buttered, than when boiled in a pudding-cloth well floured; boil it an hour and three quarters; but the surest way is to stew the apples first in a stewpan, with a wine-glassful of water, and then one hour will boil it. Some people like it flavoured with cloves and lemon-peel, and sweetened with 2 oz. of sugar.

German Apple Pudding.—Butter a pie-dish, and lay in it a layer of bread crumbs, then a layer of good cooking apples pared and quartered, then a layer of good brown sugar, then a very thin layer of finely-chopped suet or little bits of butter, then a layer of bread crumbs, and so on until the dish is filled, taking care to have crumbs at the top. Bake the pudding in a moderate oven for three quarters of an hour. Before serving sift sugar on the top.

Apple and Bread Pudding.—Bread crumbs $\frac{3}{4}$ lb., $1\frac{1}{2}$ lb. apples, sugar, and butter. Pare and cut the apples as for a pie. Put a little butter into a deep pie-dish, then a layer of apples with a little sugar, then a thick layer of bread crumbs, then another layer of apples, and sugar, and bread crumbs. Lay a few small pieces of butter on the top, and bake in a moderately hot oven; or omit the butter and moisten the top with a few spoonfuls of milk. Cover close. Bake slowly three quarters of an hour, then uncover, and brown quickly.

Apple Marmalade.—Peel, core, and boil the apples with only sufficient water to keep them from burning; beat them to a pulp; to every lb. allow

$\frac{3}{4}$ lb. of lump sugar; dip the lumps into water, put these into a saucepan, and boil until the syrup is thick and can be well skimmed; add this syrup to the apple with half a teaspoonful of minced lemon-peel to each lb., and stir over a quick fire till the apple ceases to stick to the bottom of the pan. Dip jelly moulds into water and lay in the bottoms, as they are inverted, a few strips of citron and some blanched almonds; then pour in the marmalade, and when cold it will turn out easily.

Apple Jelly.—Pare and core large juicy apples; set them on the fire with as much water as will cover them; boil quickly till the fruit is quite soft; add a quart more water, and boil half-an-hour longer; then run it through a jelly bag; set it again on the fire, with $\frac{1}{2}$ lb. of loaf sugar, the juice of a lemon and the rind, pared very thin, to each pint of pulp; boil all together; strain, and pour into a mould. The best kind is the one known as Manks Codlin.

Apple Jelly (another way).—Pare and cut small thirteen good-sized acid baking apples; as they are cut, throw them into two quarts of cold water; boil them in this till the substance is extracted and nearly half the liquor wasted; drain them through a hair sieve, and with the back of a spoon press out all the juice; run it through a jelly bag, and to a pint of the liquid allow $\frac{1}{2}$ lb. or $\frac{3}{4}$ lb. of pounded loaf sugar; put it on the fire with the peel of a lemon, stir it till the sugar is melted; when it boils take off the scum, add the juice of the lemon; let it

boil for twelve or fifteen minutes; try a little of it in a saucer, and when it jellies take out the peel and pour it into a mould. This jelly will keep good for some weeks.

Apple Fritters.—Make a batter with six well-beaten eggs, a pint of milk, a little powdered nutmeg, and fine flour enough to make it of the requisite consistency. The apples should be pared, cored, and cut into slices 1 in. thick. Squeeze the juice of a lemon into some moist or powdered sugar (the former is the best), and cover each slice of apple with it after dipping it into the batter. Have ready some boiling butter or lard in a pan, and fry a light brown.

Apple Fool.—Pare your fruit, and either scald or bake it until sufficiently soft to pulp it through a colander; sweeten it agreeably to taste, and fill your glasses three parts full with it; then plentifully sprinkle in some cinnamon and cloves in powder; put a good layer of rich scalded cream, and sift white sugar upon the top.

Apple Tart (Plain).—Apples, a teacupful of sugar, peel of half a lemon or three or four cloves, ½ lb. of puff paste. Rub a pie-dish over with butter, line it with short pie-crust rolled thin, pare some cooking apples, cut them in small pieces, fill the pie-dish with them, strew over them a cupful of fine moist sugar, three or four cloves, or a little grated lemon-peel, and add a few spoonfuls of water; then cover with puff paste crust, trim off the edges with a sharp knife, and cut a small slit at each end, and

bake in a quick oven. Time to bake, one hour, or, if small, half an hour.

Good Stewed Apples.—A most simple and delicious way of stewing apples is to pare and core some fresh Blenheim Oranges: nearly fill an earthen crock, such as is used for keeping butter in, with them; put a small quantity of water in the crock; cover the apples over the top with their cores and peeling; put the crock into a moderate oven; turn it now and then, and cook till tender. When done, remove the peel on the top, and turn out on to a dish. The writer has frequently tried this with apples like the Blenheim in its fresh state, and the Newtown, and had a good result without the addition of any sugar.

Apple Batter Pudding.—Peel six acid baking apples; take out the cores and fill the cavities with sugar; put into a pie-dish and cover them with a light batter. Bake until the apples are tender. Serve hot.

Apple Charlotte.—Peel and slice a quantity of good apples; take a loaf of fine white bread, deprive it of all crust, and cut it into thin slices, which are to be well buttered; lay them to fit in a large mould, also buttered, and put in a layer of apples, sprinkling over them some grated lemon-peel, and sweetening them with brown sugar; next place a slice of bread-and-butter, and continue alternating the bread-and-butter with the apples until the mould is quite full; squeeze in the juice of two lemons, and bake it for an hour; turn it out, and serve it as you would a cake.

Apple Bread (without flour).—Take three large Seville oranges, peel them very thin, boil the peel until it becomes soft, then chop it small; pare and core four dozen Golden Pippins, boil them with only enough water to cover them; when nearly done, add 1½ lb. of brown sugar, the shred orange peel, and the juice of the oranges; boil it altogether until smooth, then put it into a pan, and stand it in a warm place to rise; let it remain for twelve hours at least; form it into rather long-shaped loaves, and bake it in a quick oven.

Apple Beverage.—Cut four good apples, each into eight parts, without removing the skin; put them into two quarts of boiling water, and boil them till quite soft; pass the water through a sieve, pressing the apples gently against its side, but do not rub them through. Add sufficient honey to make it rather sweet, and drink it while lukewarm. Two apples thrown into rice water or barley water, and boiled, form an excellent drink. Rice water is made by boiling gently a handful of rice in a quart of water till the rice becomes a pulp; pass it through a sieve, and press as much of the rice through as possible; sweeten it with honey.

Simple Apple Pie.—Pare, core, and cut up the fruit into thin slices, lay it in your dish, and sprinkle some sugar amongst it; when full, put in the juice of two lemons, with a little of the rind finely shred and some cinnamon in powder; line the dish and cover it with a tolerably good crust, and bake it for about an hour. Before serving, sift a little sugar over it.

Apple Siberian Crab Jelly.—Siberian crabs 1½ lb., water one pint. Boil the fruit till broken; strain and weigh the juice, then boil it quickly ten minutes; add 10 oz. of sugar to each pound of juice, and boil again from twelve to fifteen minutes. When a stiffer jelly is required than can be obtained from the juice of the fruit alone, dissolve ½ oz. of isinglass in half a pint of water, then add a half-pint jar of any kind of fruit jelly; when quite dissolved, strain the whole through a jelly bag; then stir it till nearly cold, and pour it into a mould.

Apple Ginger Sauce.—Take half a pint of new milk, in which dissolve 2 oz. of fresh butter, and gradually dredge in enough flour to make it thick; then stir in two tablespoonfuls of white sugar, and two dessert-spoonfuls of the best ginger in powder; stir it over the fire until it boils. This forms a most relishing sauce for apple dumplings, apple puddings, &c.

Apple Cake for Children.—Grate some stale bread, and slice about double the quantity of apples; butter a mould, and line it with light paste, and strew in some crumbs, mixed with a little sugar. Then lay in apples, with a few bits of butter over them, and so continue till the dish is full. Cover it with crumbs or prepared rice. Bake it well.

Apple Cream.—Boil twelve large apples in water till soft; take off the peel, and press the pulp through a hair sieve upon half a pound of pounded loaf sugar; whip the whites of two eggs, add them

to the apples, and beat altogether till it becomes very stiff and looks quite white. Serve it heaped up on a dish.

Apple and Pear Marmalade.—To make apple and pear marmalade, take equal parts of Hessel pears and any soft apple, such as Lord Suffield, and to every pound of fruit, when pared and cored, add not quite ¾ lb. of preserving sugar, and cook them in a preserving pan until the pears are soft, continually stirring them. Place in jars the same as any other preserve, and it will be found equal, if not superior, to any other, not excepting apricots.

Chartreuse of Apples.—Well boil ½ lb. of the best Carolina rice in a quart of fresh milk, taking the greatest pains to prevent it from catching at the bottom of the saucepan. Pare seven large or nine middling-sized Kentish Pippins; take out the cores without cutting the fruit quite through; put a little raspberry jam into each hole and fill up with milk. Edge a deep pie-dish with a rich light paste; lay in the apples, and level up the spaces between them with the boiled rice. Brush it over with the yolk of an egg, dust it well with pounded loaf sugar, decorate it with a few pieces of candied lemon or orange peel, and bake it for about forty minutes in a brisk oven. This dish is better eaten hot.

French Turnover of Apples.—Eight large apples, 8 oz. of sugar, 2 oz. of butter, and the rind of a lemon. Prepare the apples as for a pie; put them into a saucepan with the sugar, butter, the rind of a lemon, rubbed on a piece of

sugar, and two tablespoonfuls of water; cover the pan, and set it over a slow fire, turning it occasionally till the apples are about half done, then pour them into a basin to cool. Roll out a piece of paste in a circular form $\frac{1}{8}$ in. thick, and about the size of a dinner-plate; wet it round, and fasten a rolled cord of paste within 1 in. of the edge; put in the prepared apples, raising them in the centre in the form of a dome; spread some apricot or orange marmalade over the surface, and cover the whole with another circular piece of paste, and press the edges together, or fold them over round the edge in the form of a cord. Spread some beaten white of egg all over the top with a soft paste-brush; then strew coarsely pounded or rough granite sugar over the entire surface, and bake lightly in a moderately hot oven.

Apple Trifle.—Scald and rub through a sieve sufficient apples to make a thick layer at the bottom of a dish, adding sugar as required and the grated rind of half a lemon. Mix half a pint of milk and the yolk of an egg; scald over the fire, but do not let it boil; add a little sugar, pour it into a basin, and let it remain till cold; lay it over the apples with a spoon, and put the whites of two eggs well whisked to froth on the top.

Apples and Tapioca.—Peel four or six good-sized apples, take out the core, and fill up the cavity with sugar and powdered cinnamon, putting a small piece of butter on the top of each. Place them in a baking-dish, and strew round them a cupful of

tapioca (raw) mixed with sugar and some grated lemon rind; fill the dish with water, and put in a gentle oven until both apples and tapioca are done.

Apple Snow.—Six apples, the whites of six eggs, and ¼ lb. of white sugar. Pare the apples, and set them over the fire in cold water; when soft, rub them through a sieve; beat the whites of six eggs to a froth, adding the sugar, and after well beating the cooked apples also, whisk the whole together till it becomes like stiff snow, and heap it high on a china dish, or lay it over stewed apples or trifle.

Apple Sorbet.—Take two large apples, cut them as thin as you possibly can, put them into a covered jug with half a spoonful of powdered ginger and enough white sugar to sweeten; pour half a pint of boiling water upon them, and let them stand upon the hob, or in a very cool oven for an hour or two. When cold, strain off the liquor, and, as wanted, pour a sufficient quantity into a champagne glass, adding a very small quantity of carbonate of soda; drink while it is effervescent. Apples which are not good enough for eating answer quite as well as the best for this beverage.

Meringue of Apples and Rice.—Peel six apples, core them, cut them in half, and place them in a flat stewpan with half a pint of water, 4 oz. of loaf sugar, a few cloves, and a little cinnamon; let them boil gently till they become quite soft, then remove them, and let the syrup boil away till reduced to a couple of tablespoonfuls, when you strain it over the apples. Put into a saucepan ½ lb. of

Patna rice and a quart of water; leave it on the fire till the water boils, drain off the water, add one pint of milk, 4 oz. of white sugar, and the thin rind of a lemon. When the rice is thoroughly cooked, and has absorbed all the milk, let it get cold; then remove the lemon rind, and work into it the yolks of three or four eggs; then lay it out on the dish in which it is to be served, place the apples on the top, and cover the whole thoroughly with the whites of the eggs beaten up into a stiff froth, with a tablespoonful of powdered lump sugar; sprinkle the powdered sugar over, and bake twenty minutes in a slack oven.

Normandy Pippins.—These form a very convenient second-course dish when there is custard at table, it being particularly suited to the flavour. They are to be obtained at all the grocers, and should be soaked in cold water for about twelve hours. To every pound of apples put a quart of water and ½ lb. of moist sugar (or the amount to suit the taste) with about a dozen cloves and a little fresh lemon-peel; let them simmer till quite tender; when cold lay them in a dish, with thin strips of lemon-peel over the tops, and pour over them as much of the syrup as the dish will hold.

Apple Puffs.—Make a crust the same as for a light pie-crust; roll as thin as possible; cut out in small round cakes with a common biscuit cutter; take one of these, wet it round the edge, and place in the centre a teaspoonful of apple sauce. Take another and cut with a small cracker cutter a hole in the centre about 1 in. in diameter; place the ring

which is left upon the first one, and pinch the edges tightly together. Bake in a quick oven.

Apple Posset and Bread or Biscuit Jelly.—Boil some slices of white bread in a pint of milk; when the bread is quite soft remove it from the fire, sweeten with sugar, and add a little powdered ginger; pour it into a bowl, and gradually stir in the pulp of three or four nicely baked apples.

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